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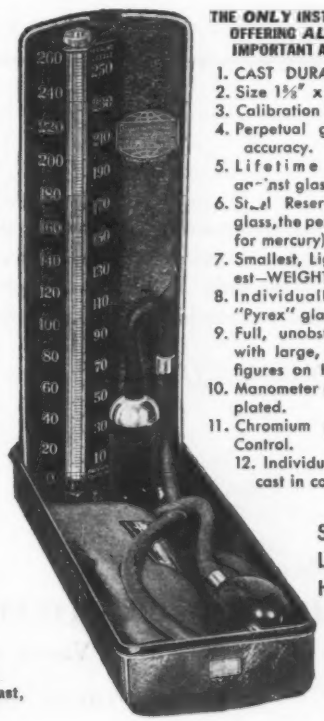

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COMFORT STANDARDS IN THE TROPICS*

D. V. S. REDDY

(From the Medical College, Vizagapatam)

Comfort and efficiency of the individual may be regarded as the keynote of all the preventive medicine during the last decade. In India, however, in spite of the extreme discomfort and utter prostration commonly experienced by large sections of the public all over the land, during the hottest parts of the year, the fundamental biological problem, namely, the relation between the organism and its environment, has either been entirely forgotten or only subordinated to the more spectacular programmes of active warfare against a few diseases.

More than 2000 years ago, HIPPOCRATES recognised the importance of a proper environment to the growth and development of human body. In his famous treatise on " Airs, waters, etc." he contrasted the feeble constitution and predisposition to disease of those who lived in stuffy hollows sheltered from breeze with the big strong bodies, the high resistance to disease and long life of the races exposed to cold northern wind. Not until a score of centuries had passed by, was the truth of this ancient observation vividly brought out by patient statistical work undertaken about the year 1750 A.D. by DR. SHORT, who observed that the inhabitants of dissimilar situations on similar soils had different degrees of health and that the healthier districts were much better ventilated than the unhealthy areas where the air was not briskly fanned. Nearly a century later, FARR noted that the mortality of cholera was increased by calms and diminished by winds. In the nineties of the last century, HAVILAND reached the conclusion that what was true of cholera was true of many other diseases and produced statistical evidence to show that the mortality from the diseases of the heart is least in areas well swept by winds. He also clearly understood " the necessity for studying in connection with the circulation of the air, the configuration of the land and the planning of our roads and streets."

The laborious investigations of L. HILL and VERNON have demonstrated that " the more comfortable the conditions for the individual, the more contented he will be and that the better work he will do." Humanity is likely to be more happy than at present, if those at the helm of national affairs bear in mind the wise admonition, " The important point is not what an individual will put up with or become accustomed to, through depression of his vitality but what are the best atmospheric conditions for health and efficiency." The evil resulting from long hours of work in an unhealthy stuffy atmosphere does not become manifest immediately and often leads people into a feeling of false security. Slowly but surely

Paper read before the Medical and Veterinary Section of the Indian Science Congress held in Calcutta, January, 1935.

will appear the vicious chain of lowered vitality, ill-health and disease. Accident-proneness increases at an alarming rate. Efficiency of work, as judged by output, falls considerably. Health becomes undermined and predisposition to disease becomes established. Even among sedentary workers, sickness rate increases. Absenticism rate of school children in ill-ventilated rooms is strikingly higher than that of boys accommodated in better ventilated rooms. (Haslam 1930; Vernon 1934). The average expectation of life also appears to suffer a reduction. On the other hand, comfort at work, not only generates and nurses the joy of living but also enhances the efficiency of " the living machine." The output of work increases. Rests during work hours become less frequent and of shorter duration. Loss of time and money due to sickness sinks to an appreciably low level. Even during walking or running comfort tends to keep down pulse rate and relieves heart of extra-work, required to send out additional blood to cool the body.

What is Comfort?

As a result of numerous original observations made by Haldane, Hill and other workers, it is now recognised " that discomfort and harm resulting from being in a badly ventilated place result from the atmosphere being in a condition which interferes with body's ridding itself of heat." (Haslam 1930). Chemical constitution of the atmosphere is no longer thought to be the important feature. Prominence is now given to physical factors. The human body maintains a fairly steady body temperature of about 98·4°. Under normal circumstances, in temperate climates, the heat loss is effected in the following manner:—

(*i*) By Radiation = 50% of the total loss.

(*ii*) By convection – 30% of the total loss.

(*iii*) By evaporation of moisture from lungs and skin—20% of the total loss.

If the fraction of heat lost by one channel is reduced owing to change of environmental condition, that lost by one or two of other channels is increased in rough proportion, in order that the body may maintain a steady temperature. That is why at higher temperatures, when loss due to radiation and convection is less, evaporation plays a greater part. The fractions of heat lost by the 3 channels ought to be so proportioned as to reduce discomfort to a minimum or in other words to induce maximum sensations of comfort. This maximum of comfort varies greatly with the character of the work performed but this paper limits itself to the conditions required for sedentary workers only.

Flugge was the first to suggest that the healthiness or otherwise of any atmosphere depends on physical factors. Haldane found that the index of comfort at high atmospheric temperatures is determined by the wet bulb temperature. L. Hill (1919) pointed out that loss of heat from the body depends more on the rate of movement of air than on its temperature. Vernon (1928), Dufton (1930), Bedford and Werner (1934) have recently noted that the amount of radiation must also be considered as a factor producing a particular condition of warmth. Therefore according to the most recent investigations, heat loss from the human body is dependent on 4 atmospheric conditions (1) Dry bulb temperature; (2) Wet bulb temperature; (3) Air velocity; (4) Radiation from surrounding objects.

Methods of Estimating Comfort

In order to assess the probable effects of any particular atmosphere to which persons are exposed, ways and means have to be devised to estimate and express the condition of the atmosphere in terms of the recognised physical factors. Every day, new instruments of precision, claiming to give more reliable estimates than their predecessors, are appearing in the market. The ordinary thermometer gives no indication of the physiological effects of any particular environment. The wet bulb thermometer gives a little more information as the evaporative power of the atmosphere is indicated by the depression of the wet bulb. Both the dry bulb and wet bulb temperatures afford only a static method, much inferior to the dynamic method, illustrated by the 3 procedures that may be now referred to. As the cooling power of any atmosphere depends not only on the temperature and humidity but chiefly on the movement of air, Hill (1919; 1923) developed and perfected the kata-thermometer. Houghton and Yagloglou (1925) working at Pittsburg in America have suggested another procedure to arrive at a probable estimate of the atmosphere. Various combinations of air temperature, humidity and air movement which induce equal sensations of warmth noted by subjects passing to and fro between two psychromatric chambers (in which the temperature, humidity and air movement can be controlled independently) were utilised to

construct thermometric charts. This combination of three factors of air temperature, humidity and air movement into a single index is known as the " effective temperature index. This is not the place to discuss the controversy regarding the relative advantages of the two methods as indices of atmospheric conditions. VERNON (1934) argues that the simple "kata" readings are better because people approximately vary their clothing to neutralise temperature differences. One may turn round and ask how the half-naked masses of India can overcome this effect. Suffice it to say that the bulk of evidence seems to suggest the effective temperature scale takes too much account of air temperature and very little account of air velocity.

Yet, a third and the latest type of " Comfort Indicator " has only recently been perfected (DUFTON 1930; 1933). This little robet known as " Eupatheoscope " is a hollow cylinder (painted black and 22″ high with a diameter of 9½″) which is heated electrically so as to maintain a surface temperature of 75°F, corresponding to the surface temperature of a human body. Rate of heat loss from the surface (heat input required) varies with the combined effects of air temperature, movement of air and radiation. The power supplied, which is controlled by a thermostat, is recorded. Heat loss from the cylinder at the rate of 17.5 B. T. U. per sq. ft. of surface per hour is regarded as corresponding to the normal standard of comfort, for human beings in England (*i.e.* still air at 64°F.). Some American workers (WILLIARD ET AL 1933) have recently recalibrated this instrument using a different standard, as observations in America on the surface temperature of the skin and of clothes give a mean temperature of 83°F. If this instrument is to be used for any investigations in India, it has to be recalibrated in view of the findings (REDDY 1932) that the average skin temperature in Indians is higher than that of the inhabitants of the temperate climates. The temperature shown by Eupatheoscope is known as " Equivalent Temperature." In still air, this represents the effect of convection and radiation, as these factors affect the human body. It has been possible to establish correction factors to kata readings with the help of this instrument. But when there is any movement of air, as there is in most living rooms, the readings given are not very reliable.

The globe thermometer, introduced by VERNON (1928) and employed by DUFTON (1932), BEDFORD and other workers (1934) is reported to be a good indicator of human comfort. VERNON (1932) points out that the figure of the cooling power of the dry kata thermometer has to be corrected for radiation effects by utilising the readings of the globe thermometer.

THE KATA-THERMOMETER

So, the kata-thermometer offers the easiest and nevertheless, a very reliable method of estimating the atmospheric conditions. This instrument is an alcoholic thermometer with a cylindrical bulb 4 c.m. long, 2 c.m. in diameter with a stem 20 c.m. in length. It has two graduations (one at 100°F. and another at 95° F.). Owing to the unavoidable differences in the size and conformation of different kata thermometers there are small differences in the cooling time of various instruments, even under identical conditions of air temperature and velocity. This factor is experimentally determined and it converts the rate of heat loss of kata into terms of millicalories per sq. cm. of kata surface. This factor usually varies from 460—490, the factor being marked on each instrument. To know the cooling power of air, one has to divide the factor by the number of seconds taken by kata to cool from 100° to 95° F.

VERNON and other observers (1926) found that the calculated kata factor is not constant at very low or very high temperatures (over 57° F.). The temperature correction to be applied to the ascertained H/θ was experimentally determined to be smaller and smaller the greater the magnitude of H/θ ranging from 0.44% per degree F. with a value of .27 for H/θ to 10% per degree F. with H/θ of ·6 and upwards. New tables constructed by VERNON making allowance for this temperature factor have been used in the calculation of air velocity in this paper.

The simple kata, as contrasted with the more complicated recording electrical types, is used in 2 forms (1) the dry kata and (2) the wet kata. The dry kata is the one which is most useful generally. The rate of cooling of this instrument is independent of the degree of moisture in the air. The silvered kata and the clothed kata are improved forms of this instrument. The wet kata, however, is particularly useful in hot humid environments. Heat lost, by evaporation particularly, is liable to great alterations at high temperature when, the part lost by radiation and conduction is reduced to zero and the loss through evaporation is the only available means.

The cooling of the kata due to evaporation is much greater than that experienced by human beings under usual conditions, though when men are perspiring freely (as in midday sun in midsummer) the reactions are found to be a valuable index of comfort or discomfort of the environment. The rate of cooling of the wet kata appears to depend only on the wet bulb temperature, even in air nearly saturated and to be independent of the dry bulb temperature.

The limitations of the dry kata are generally apt to be forgotten. As HILL himself pointed out, the kata is an instrument designed primarily for the measurement of its own rate of cooling when its temperature approximates to that of human body (97.5 F.). HASLAM (1930) points out four very important reasons why the kata cannot pretend to be a means of direct measurement of heat loss by human beings exposed to similar conditions.

(1) The bulk and surface area of the body are quite different from those of the instrument.

(2) The body is ordinarily clothed while the kata is naked. Recent observations at Hampstead using a clothed kata (cloth just touching the surface of bulb) suggest that this is a better indicator of comfort of a clothed subject than the naked kata.

(3) The body has the power of regulating its own temperature by secreting sweat which cools the body by evaporation. The common condition of skin is neither wet nor dry; in fact, it is something between the conditions of the wet kata and the dry kata.

(4) The body can adapt (acclamatise) itself to the varying atmospheric conditions, so that its reactions to similar conditions will not always be the same.

In spite of all these defects, kata thermometer is an extremely convenient and fairly reliable method because it enables one to measure the cooling power of the environment and to compare the state of one set of conditions with that of other sets.

KATA-THERMOMETER READINGS IN INDIA

The indifference of the medical and Public Health workers to the question of comfort in the tropics is apparent from the relative scarcity of data in India. Some credit is due to the Indian meteorological department for recording kata thermometer observations twice a day from 1st January, 1921 to 31st March 1923 at Madras, Lahore, and Calcutta. It is a matter for regret that similar observations are not taken at present at the observatories under the control of this department. I am indebted to DR. NARMOND, the present Director-General of Observatories, for a tabular summary of the data, from which the following is an extract. Details regarding the actual site where the readings were taken are not mentioned. If the observations had been made on the lawn, they might give an indication of the C. P. that can be attained in the cities in open air. On the other hand, if the observations were made on the tops of the observatories, these readings are only of theoretical interest, as they form no guide to the actual conditions in the open spaces or offices of the cities.

TABLE I

Locality & hour	Jan.	Feb.	Mar.	April	May	June
(1) Calcutta 2 p.m.						
Dry ...	5·6	4·1	0·9	0·2	0·1	1·9
Wet ...	21·1	20·4	17·2	15·3	12·8	12·8
(2) Lahore 4 p.m.						
Dry ...	8·9	7·1	1·4	−0·4	−2·3	−1·7
Wet ...	24·5	25·6	26·4	21·9	19·9	16·0
(3) Madras 2 p.m.						
Dry ...	5·4	5·9	3·9	4·8	0·0	0·1
Wet ...	21·2	21·8	21·2	18·1	18·3	18·1

Locality & hour	July	Aug.	Sept.	Oct.	Nov.	Dec.
(1) Calcutta 2 p.m.						
Dry ...	2·5	3·1	2·6	2·8	4·2	5·2
Wet ...	12·7	11·5	11·3	14·9	18·8	20·7
(2) Lahore 4 p.m.						
Dry ...	−0·2	0·4	0·5	2·1	4·6	8·2
Wet ...	15·5	12·7	13·3	17·7	18·7	24·1
(3) Madras 2 p.m.						
Dry ...	1·2	1·1	2·2	4·7	5·3	5·2
Wet ...	16·3	16·5	18·3	16·9	21·0	20·2

I was also given to understand that DR. BHATTACHARJEE, Professor of Physiology in the Presidency College, Calcutta, made a large series of observations with kata-thermometer about 1926-27 and published a paper, which I regret I have so far been unable to read in original. More recently LT. COL. JOLLY (1929) published records of kata-thermometer readings taken on the premises of the Public Health Institute, Rangoon. Attention may be invited particularly to two very significant findings. The average cooling power, even in winter, did not rise to the level of 6 (HILL's minimum standard for sedentary workers). This figure was attained only on 4 days in the year.

TABLE II

Rangoon (1928—29)

Seasons	Dry Bulb	Wet Bulb	D. K.	W. K.
Hot season ...	84·38	71·16	2·51	11·59
Rainy season ...	86·53	83·76	3·14	10·61
Cool season ...	82·66	71·16	4·80	16·37

The present investigation was commenced in September, 1923, and is still progressing at

"Vizagapatam (Lat. 17°.42 N and Long. 83.2 E) situated along the shore of a wide bay, 5 miles across in the Bay of Bengal, in a picturesque amphitheatre of hills." It is noted for temperate climate, the highest temperature recorded being 102°F. and the lowest 64°F. The mean temperature for the year is 81 and the averages of maximum and of the minimum temperatures are respectively 87°F. The daily range of variation is strikingly small. The mean annual humidity is 72.6%, the maximum of humidity being recorded in the middle of September while the driest portion of the year seems to be about the middle of December. The prevailing wind blows from the north-east during the N. E. monsoon; during the rest of the year the breeze comes from the south-west point of the compass. The wind displays greatest strength during April, May and June and is weakest from September to December. In the course of this investigation Kata readings have been taken under the most diverse conditions in different situations and at different hours of the day. It is not possible either to present all the data or to discuss all the correlations in this short paper. An attempt has been made to illustrate the broad outlines of the main problem.

The first step in all these investigations is to find out the average temperature and cooling power of the open-air environment of the locality. The situation selected for this type of work must be a fairly ventilated locality. Readings were taken in the verandah of the first floor of the Medical College building (New Block) which is itself situated on the slope of a sand hill (about 100 ft. high) overlooking the town of Vizagapatam. Average cooling power, etc. were derived from Kata readings taken between 10 a.m. and 4 p.m. in the windward corner of the Verandah.

The cooling powers indicated by the instrument are of little practical value unless they correspond in some measure with the degree of cooling induced in human body by various combinations of physical conditions. As we cannot predict the degree of correspondence, workers have adopted the laborious method of frequently repeated direct comparison. VERNON, BEDFORD and WERNER (1926) made observations in 12 factories noting down the subjective sensations of air movement and of comfort along with the records of temperature and cooling power of the atmosphere where work was being performed. At Vizagapatam, observations on the same lines were accumulated and analysed. The dress worn by the persons whose subjective sensations were recorded, consisted of the usual type of cotton clothes (trouser, shirt, open at the neck with sleeves up to elbow). In this dress, roughly about 1/7 part of the body surface was exposed. Taking the sensation of air movement as a criterion and checking it against the velocity of air, as deduced mathematically from Kata readings (by Hill formula modified by BEDFORD) and the cooling power of air, it was noted that the increasing degrees of sensations of air movements, corresponded fairly closely with the rise in the calculated velocity and the steady rise of the observed cooling power. But as VERNON has pointed out, the sensations of air movements experienced cannot be measured either in terms of temperature alone or of air velocity alone, but needs a combination of the two, such as yielded by the Kata readings.

Table III—Showing the lowest, highest and average cooling power of the environment during the various months of the year.

Month	Conditions associated with greatest discomfort		Conditions associated with greatest comfort		Average for each month	
	Temperature	Cooling power	Temperature	Cooling power	Temperature	Cooling power
May	35·0°C.	0·43	31·8	5·04	32·4	1·56
June	34·0°C.	1·18	31·0	5·78	32·5	2·60
July	33·0°C.	1·70	25·5	8·85	31·4	2·99
August	35·0°C.	0·71	24·5	14·21	30·3	3·15
September	34·5°C.	1·12	27·0	7·00	30·6	2·78
October	32·0°C.	2·10	25·2	9·38	29·7	3·60
November	29·0°C.	3·35	25·0	10·00	27·4	5·37
December	27·0C.	3·70	24·0	9·57	26·2	6·10

Table IV—Showing air temperature and air velocity calculated correlated with subjective sensations of air movements.

Sensation of air movement noted	Summer (May, June, July)			Winter (Oct., Nov., Dec.)			Difference		
	Temperature	Cooling power of air	Air velocity in ft. per min.	Temperature	Cooling power of air	Air velocity in ft. per min.	Temperature	Cooling power of air	Air velocity in ft. per min.
No breeze at all (very stagnant)	32·50	1·16	9·80	27·86	2·95	25	4·62	−1·79	−15
Slight and occasional breeze ...	32·80	1·42	39·00	28·06	3·47	56	4·74	−2·05	−17
Moderate Breeze	32·40	2·11	126	27·14	5·19	156	5·26	−3·08	−30
Breezy	30·50	4·15	263	26·80	7·13	316	3·70	−2·98	−53
Very Breezy (stormy) ...	29·80	6·74	659	26·30	8·20	396	3·50	−1·46	...

Secondly, sensations of comfort experienced by those in the room were recorded (on a scale of 5) actually before taking the kata reading. There is a high correlation between subjective sensations of comfort and the observed air temperature, velocity and the dry kata cooling power, as can be gathered from the following table, which shows, in addition, a remarkable difference between the figures for summer and those for winter. The significance of this difference will be referred to, again, in greater detail.

TABLE V

Sensations of Comfort experienced.	Summer		Winter		Difference	
	Temperature	Cooling power	Temperature	Cooling power	Temperature	Cooling power
Intolerable "Very Sultry"	33·50	0·90	...	...	...	...
Sultry	32·56	1·37	29·73	2·66	2·83	−1·29
"Borderland of Comfort" (("Tolerable") Comfortable ...	31·60	2·86	28·60	3·76	3·00	−0·90
"Well" "Fine" "Pleasant" ...	31·10	4·42	26·00	6·48	5·10	−2·06
"Cool," "Bracing," "Stimulating"	29·90	6·62	24·96	7·80	4·04	−1·18

A closer study of the various data was made to ascertain the physical conditions of air temperature and air velocity, under which a sedentary worker may experience a tolerable or desirable degree of comfort. Cooling power of air in different temperature ranges, when tolerable and desirable sensations of comfort were experienced, has been recorded.

TABLE VI

Temperature Range	Comfortable		Pleasant		Exhilarating	
	Summer	Winter	Summer	Winter	Summer	Winter
20—23°C ...		5·21	...	9·6	...	...
24—27°C ...		4·4	...	6·3	8·2	8·8
28—31°C	3·4	3·4	4·4	5·8	7·7	...
31—33°C	2·8	...	...	...	6·0	...

Observations with "wet kata" were also recorded on typical days. The following table summarises the data.

TABLE VII

Nature of sensations	Average of dry bulb	Average dry C. P.	Average wet C. P.
Sultry ...	31·6	1·5	5
Tolerable ...	30·6	2·3	7
Comfortable ...	29·3	4·55	9·6

When the sensations experienced were described as 'comfortable' the following relation was noted between temperature, dry cooling power and wet cooling power.

TABLE VIII

Temperature	Dry Kata Cooling power	Wet Kata Cooling power
25·5	7·3	10·2
26·0	4·8	8·4
27·0	5·6	8·5
28·0	3·7	8·0
29·0	4·7	7·7
30·5	3·4	8·2
31·5	5·0	10·0
33·5	3·4	11·7

This again seems to suggest that a D.K.C.P. of 3.4 and a W.K.C.P. of 8.2 are the lowest figures that can be fixed as irreducible minimum standards for comfort.

It might be objected that such a calibration on a basis of subjective sensations, which might vary from person to person and from time to time, is not reliable and that it should depend on better measurable or demonstrable results than sensations. CAMPBELL and ANGUS (1928) have, in a series of careful experiments, observed pulse rate, skin temperature, sensible and insensible perspiration, metabolism, heat loss in the naked and clothed subjects, resting or working, at dry bulb temperature from 20 degrees to 30 degrees centigrade, in still and moving air and in relatively dry and moist atmospheres. Their conclusion is interesting. "Judging from the evidence afforded by pulse rate, water evaporation and cheek temperature, the dry kata cooling power is as good an indicator of physiological reactions to atmospheric conditions as is effective Temperature Index." It will be readily agreed that for estimating the suitability or otherwise of different atmospheric conditions, physiological reactions are a better guide than mere comfort sensations. This aspect of the problem is still under investigation but there is no reason to doubt the contention of the previous workers that the dry kata readings afford a reliable clue to the nature of the physiological reactions likely to be provoked by the particular state of atmosphere.

The tables also illustrate another interesting point, namely, the existence of acclamatisation effects, first observed by VERNON, BEDFORD and WERNER 1926). They found that in summer British factory workers experienced a given sensation of warmth, when the air of the factory was 5 degrees F. warmer than in winter and had a cooling power of about 1 unit lower. VERNON (1934) also quotes the work of YAGLOGLOU and his co-workers in America, who found that comfort temperature was nearly 10 degrees F. higher in

America than in England. VERNON suggests that this higher level of temperature of comfort is due chiefly to the fact that Americans are acclamatised to a higher temperature than the Britisher. Re-examination of the Vizag readings reveals the influence of acclamatisation. In summer, when the air was felt to be very stagnant, it had a cooling power of 1.16; but with increasing degrees of air movement, the cooling power rose steadily till it attained a maximum of 6.7. In winter, there was a similar increase of c.p. with the improvement in the sensations of air movement. But the c.p. corresponding to each sensation was about 1.5 unit higher than in summer. VERNON admitted that in his series of observations, the difference may partly be due to more clothing being worn in winter. In our series of readings the subjects wore the same quality and amount of clothing throughout the year, and this factor of clothing may, therefore, be eliminated. The only explanation and probably, the true explanation, is the hypothesis of the "wisdom of the body" to adjust itself and become more acclamatised to cold during winter and to heat during summer. In the next table, it is again evident that a given degree of sensation of comfort was experienced at a cooling power, which was 1 unit higher in winter than in summer and at a temperature which was 3.5 degrees C. lower. Here again, the difference corresponds roughly with the differences noticed when sensation of air movement were taken as criterion of comfort. If there is a definite effect due to acclamatisation at Vizag, where the summer temperatures are generally below 100 degrees F. and winter temperature above 65 degrees, it would be interesting to investigate the degree of acclamatisation actually observed or possible in localities like Lahore, Cawnpore, Calcutta, etc., where the summer temperatures shoot up to 115 to 120° F, while the winter temperatures approach or actually drop to freezing point.

Heat regulation mechanism of the body seems to be set by the outside temperature, and adjusts itself in summer to a level different from that prevailing in winter. It has been recorded that acclamatisation is related chiefly to dry bulb temperature and that the effect manifests itself at an experimental dry bulb temperature of 83° F. or more, showing itself only very slightly at 81 degrees F. or below.

"Obviously," concludes a writer of authority, "research into what is comfort in different climes may give us different results, according to the degree of racial and seasonal acclamatisation."

COMMENT

The practical outcome of all these observations and discussions may now be briefly presented.

1. Should the minimum standard of comfort fixed for temperate climates be adopted as the minimum standard for Tropical India also?

LEONARD HILL, in his pioneer investigations (1919-1923) suggested a dry kata cooling power of 6 and a wet kata cooling power of 16 for sedentary workers, basing his opinions on the observations made in England. His subjects were reared up in temperate climate and were also clad in thick clothing. In the temperate climes, where this standard is insisted on. the temperature of the outside atmosphere fluctuates between—20 degrees F and 80 degress F and the cooling power of air varies from 5.5 to 8.5 in London courtyards and Hampstead Office-rooms to 10 to 30 in the garden of Hampstead Institute or on the top of Kew Observatory.

VERNON (1923) as a result of his extensive observations in factories, felt convinced that with high outdoor temperatures, HILL's minimum standard of 6 was very difficult to attain and suggested that a standard of dry kata cooling power of 5 should suffice for outdoor temperatures of 70 degrees F or more. He was inclined to accept occasionally a minimum dry kata cooling power of 4 to 4.5 (equivalent to air velocity of 42 ft. and 67 ft. per minute respectively) at a temperature of 79 degrees F.

HAIGH (1931) investigated the comfort conditions in Derby Cinemas and concluded that a dry kata cooling power of 5 is all that is easily attainable even in England. He also refers to the previous standards for cinema theatres. Johannesburg bye-laws provide that the kata reading shall in no case be required to be higher than that obtained in the open air immediately outside the house (i.e. not less than 5). The city of Sydney insists on a cooling power of not less than 6.1 at 61 degrees F but only on a c.p. of 4.8 at 70° F outside air temperature. It appears as if the general trend is to fix the attainable minimum even for the temperate climates at a lower level *i.e.*, a c.p. of 5 at 70° F and 4.5 at 80° F.

Even in tropical and sub-tropical climates, some attempts have been made to estimate the atmospheric conditions associated with comfort. STITT, in his

popular text-book (1928) quotes the work of a few investigators in this field. ORENSTEIN and IRELAND found that when the cooling power of the atmosphere was below 6 with dry kata and 16 with wet kata, the working efficiency of a native decreases PHELPS found in American Samoa that persons in sedentary occupations complained of discomfort unless the cooling power of air measured by wet kata was as great as 11. Averages of kata readings taken at noon in the open air in Samoa varied from a c.p. of 3 in December (the worst) to 4.6 in July (the best) with dry kata and from 12.9 to 19.4 with wet kata.

The figures accepted for temperate zone are not applicable to India for two reasons. First of all, Indians are born and bred up in an environment whose maximum temperature exceeds considerably the normal temperature of the body. With a rise in the atmospheric temperature, the cutaneous capillaries dilate, causing greater blood flow and increased elimination of heat from the body, if the surrounding temperature is about 80° F. When the temperature of the air is above this level, the body begins to get rid of the heat by increased sweating. The cooling rate of the body may be doubled by profuse perspiration. In the course of a few summers, the newborn gradually acclamatises itself perfectly tc its normal environment and ceases to feel discomfort even with a very low cooling power at reasonably high atmospheric temperatures. Secondly, the material and mode of dressing make a real difference. It was calculated that an unclothed human body would remain in temperature equilibrium in still air at a temperature of 81 to 83° F, while a warmly clad person would do so at 49 to 60° F. The effect of air movement diminishes with increasing amount of clothing. The common cotton robes, thin and loose, allow greater play of the air on the body than a tight fitting tweed suit. In the case of the majority of people, in addition to the distal portion of the extremities, a part of the trunk is usually uncovered and this large surface of skin, in contact with air, helps to eliminate the excess of heat by radiation, convection and, if necessary, by evaporation. So, one may doubt whether it is necessary or reasonable to insist in India on the minimum standards fixed for temperate climates.

2. What are the minimum standards that may be considered both desirable and at the same time easy of attainment, in India, where atmospheric temperatures are high?

The minimum will naturally depend on, or vary with, the locality, its outdoor air temperature and cooling power of air. For a place like Vizag, a cooling power of 5 in winter and 4 in summer is quite comfortable and not very difficult of attainment, except on a few days in the year. When the outdoor temperatures are high *i.e.* 30° to 32° C. (86 to 89.6° F) even a dry kata cooling power of 3 appears to be tolerable , if not quite comfortable. With regard to the wet kata standards, it is desirable to fix the minimum at about 10 but the figure should not be allowed to fall below 8 at any time.

How these irreducible minimum standards can be introduced and maintained in the colleges, offices and theatres, etc., in India is a problem of great importance. On the successful and early solution of this great biological question depends the future of the Indian nation.

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SPECIALITIES ON CALCUTTA CEREBROSPINAL FEVER OF 1934*

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Every now and then, an epidemic of meningitis broke out during the year 1934. Altogether 135 samples of cerebro-spinal fluid from meningitis cases during the Calcutta epidemic of 1934 were studied. Out of these, 10 samples were found to be grossly contaminated and 8 samples without any growth; possibly there was complete autolysis in these samples during the time they were brought to our laboratory. Out of a total of 117 samples from which causative organisms were isolated, 8 samples were found to contain streptococcus some of which were gram-positive diplococcus, forming chains in broth and 26 samples were found to contain *pneumococcus*. These 26 samples were all found to contain *diplococcus of doubtful gram-negative character, negative to Serum-Inulin, to start with*, but they showed a distinct halo of *greenish discolouration in blood-agar*, showing resemblance to pneumococcus. *On repeated sub-cultures* for more than 30 generations, they were found to be *distinctly gram-positive*, and *positive to Serum-Inulin* and thus, could be definitely classed as pneumococcus.

Two samples were found to contain influenza bacillus. 4 samples demonstrated both streptococcus as well as meningococcus. The rest (77 samples) showed gram-negative diplococcus, out of which 29 samples contained meningococcus pure, as they corresponded with it both in cultural and fermentative characters and 48 samples were found to contain gram-negative diplococcus of a peculiar type (6A Group). The percentages in which different organisms were found to occur may be summarised in the following way:—

6.8% Streptococcus
22.9% Pneumococcus
1.8% Influenza Bacillus
3.4% Streptococcus & Meningococcus combined
24.5% Meningococcus pure and
40.6% Gram-Negative Diplococcus of a peculiar type.

The last named peculiar group of organisms consists of easy growers—growing from the very beginning in ordinary nutrient agar (primary cultures, succeeding two and three generations and later on as well). They require no enrichment fluid in the medium for their growth, and does not ferment any of the sugars, dextrose, maltose, lactose and saccharose.

" It is noteworthy that the greatest irregularity in fermentation reactions are noticeable in the strains freshly isolated from C.S.F., which naturally were accustomed to an environment, rich in protein, while strains from the nasopharynx tended to be more regular in fermentation "[1]. But these strains of " 6A group " continued to give negative sugar reactions even after 90 generations. We used liquid sugar media, similar to that used by MURRAY without the agar, *i.e.* 1% Peptone, 1% standard salt solution (containing 25% NaCl, 1% $CaCl_2$, 2% KCl). 10% solution of sugar was first titrated and reaction adjusted to pH 7.0 to 7.2, as many samples of sugar give decidedly acid solutions, and if sterilised in this condition, they may be hydrolysed. Sufficient sugar solution was then added to the peptone filtrate to make the concentration of sugar 2%; reaction was again checked and 1% of Andrade's indicator added. Then the medium was complete, which was sterilised and immediately before use, one drop of sterile fresh serum was added to ensure growth of the organism.

These " no-sugar-fermenters " of "6A" group of strains were negative to standard meningococcus typed serum (Oxford) by agglutination. But they are *not auto-agglutinable* and *refused to grow in*

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gelatin at 20°C. They kept alive for more than seven days between 15 to 18°C even in ordinary agar, as after keeping them for 7 days at this temperature when they were put in an incubator, they were found growing after 24 hours even in ordinary agar. The growth is moist and picks up easily, when touched with platinum needle, emulsifies easily and smoothly in saline, giving an even suspension.

Perhaps, we are not justified in calling this group, meningococcus. Gram-negative diplococcus isolated from C. S. F. is not sufficient criterion of meningococcus. But " Gram-negative diplococcus, with certain cultural and fermentative properties isolated in pure culture, from the C. S. F. of a patient suffering from meningitis are agreed by all to be true meningococcus." (2) This peculiar type of organisms has been found from C. S. F. of patients suffering from meningitis, in pure cultures but both the cultural and fermentative characteristics are different from meningococcus.

Neither can they be classed as micrococcus catarrhalis. The virulence of this organism to laboratory animals, as distinct from micro-catarrhalis is very high. Rabbits are highly susceptible to infection by this group. They are not auto-agglutinable and they refuse to grow in gelatin at 20°C. The prevalence of this group of strains is so high that more than 40% of all strains causing meningitis during this epidemic belong to this group. Mortality of patients affected with this group of strains is also very high; we did not find many cases, affected with this type, to be cured. This group of strains, therefore, deserves and rightly claims to be considered as a separate entity altogether.

Classification of fatal cases has led us to conclude that the cases with mixed-infection of the meninges (Meningo and Strepto) are the most dangerous ones. Cases of pneumococcal origin generally die within 24 to 72 hours before any focus in lungs can be spotted and proper diagnosis is arrived at. They are first taken to be of meningococcal origin and are generally though very wrongly considered amongst failures of treatment of meningococcus meningitis (?) by anti-meningococcus serum. "6A" group of organisms is also responsible for creating havoes in this epidemic.

Treatment of meningococcus meningitis by anti-meningococcus serum was found generally to have given satisfactory results when adequate quantities of serum have been administered. By adequate quantities we mean 100 c.c. to 150 c.c. of serum to be injected straight off, into a patient—intrathecally as much as possible, a part intravenously and the rest intramuscularly. We have seen cures even in cases given up as hopeless in some hospitals in Calcutta, by adopting similar procedure. Addition of fresh normal serum has also helped in some cases, possibly by reason of Alexin introduced.

Though we had to sacrifice many rabbits, we have now been able to prepare high-titre serum, against one particular strain of this ("6A") group and we are carrying on with absorption test and further work on this peculiar group which resembles meningococcus in some respects but differs from it in important peculiarities.

Our sole aim from the very beginning was not diagnosis only, as is the case with clinical pathologists and as such, we would not be satisfied only when a name to this type of organism is given. What we want to impress is that there are many causes of failure in the treatment of meningitis cases, amongst which the preponderance of this new type of organism is one.

My special thanks are due to my seniors, Dr. Charu Chandra Basu of Carmichael Medical College and Dr. M. N. De of Calcutta Medical College for giving me innumerable suggestions and constant help in this line of work.

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A SURVEY OF SOME CASES OF ACUTE POLIOMYELITIS IN BIRBHUM

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Last year when Calcutta was in the grip of cerebro-spinal meningitis, we saw several cases of Acute Poliomyelitis in our district. The incidence of cases occurred in April, May and June. This year too, one or two cases are coming to our notice now. I make it bold to write this paper as in India (a) records on acute poliomyelitis are few and far between, (b) some authorities are undtr the idea that cases of acute poliomyelitis are very rare in our country, (c) the peculiarities of these cases are that they did not occur in epidemic form in the truest sense of the term except in one village in a doctor's family where 2 cases occurred simultaneously. All other cases occurred in villages lying at various distances.

Below is given an outline of seventeen cases which occurred in different parts of our district. They are grouped according to symptoms.

Facial paralysis—occurred in 5 cases. Age incidence was between 2 and 4. Sex was male. There was no fever in one case. In 4 others, fever ranged from 99 to 100 and that too for a day and facial palsy followed the next day. There was history of stupor or lethargy in all these cases. All these cases occurred in villages lying in different directions and at great distances.

Hemiplegia—occurred in two cases. The age incidence was below one year in a girl. That family had another girl who was victim to the disease at the same age and she is now in paretic condition—neglected—her age being now 6. She had high fever ranging from 103 to 105 with serious convulsions for three days after which the fever ranged from 99 to 100 with complete paralysis of right side,—(thorax and abdomen being not exempted). Another case occurred in a male boy aged 3 who had peculiar prodromal symptoms. He started with intense vomiting for a whole day and coma. Next day we detectd hemiplegia of right side and marked stupor though vomiting was less in intensity. He had a temperature which varied between 99 to 100. His stupor and vomiting were controlled with divided doses of calomel and alkaline glucose with hexamine. This case had incontinence of urine and intense constipation.

Transverse myelitis—flaccid paralysis of two legs occurred in 3 cases. The age varied between 3 to 5, the sex being all male. They all had temperatures varying from 99 to 100 for two days with drowsiness; then it was found that they could not stand on their legs.

Paralysis of a single leg—It was detected in three cases, the affected limb being left leg in all cases and sex incidence being all male. One had a remittent type of temperature for 6 days (which ranged from 99 to 101). Two others had low temperature for two days. The marked feature of these cases was that there was running from nose and extreme irritability. The age incidence being from 2 to 3.

Paralysis of a single arm—Right arm of two female children were affected after a low fever of short duration.

Peculiar affections—One case in a doctor's family, where another victim had paralysis of left leg, started with vomiting and convulsions and high temperature. He took it to be a case of cerebral malaria and injected quinine i.m. in the buttocks. On the third day the fever was off but he was found not to hold up his neck. It was found to be deviated towards the left. Neck muscles, especially sternocleidomastoideus were found to lose their tone. Perhaps motor part of accessory nerve was affected. Age of the victim was 2 years.

The last case is that of a girl aged 15 months. She had slight fever with violent shaking of the right arm and right leg for the whole day, and next day she had paralysis of right arm and leg.

Analysis of these cases will show that:

(*a*) incidence in female among the affected being 33% (5 in 17);

(*b*) the most favourable age being 1 to 4.

(*c*) almost every case started with a temperature;

(*d*) the onset was more of dromedary or stupor type than of struggling type as described by A. DRAPER in 'poliomyelitis' 1927 (Philadelphia).

(*e*) Nerve affection of these cases was peculiar in the sense that although each variety occurred—facial affection was most marked—32%. This means that the virus of the epidemic was of low infectivity which is also proved by the fact that no death occurred.

FRAUD AS MET WITH IN THE MEDICO-LEGAL PRACTICE IN INDIA*

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Medico-legal practice stands on a different footing than the ordinary medical or surgical practice in the sense that in ordinary medical practice we accept the facts that are voluntered by the patients to be true and these help us a great deal in arriving at correct diagnosis, but in medico-legal cases we ordinarily do not attach much importance to what the patient says and that we are entirely guided by our examination and physical findings in arriving at proper conclusions. This precaution is necessary because the versions of these persons are so much coloured and wrongly stated that it is worth while basing the conclusions entirely on the facts observed.

In India every medical jurist in the course of a medico-legal practice of a few years' standing must have come across several cases of this type; where the victim wanted to deceive him either by exaggeration of a trivial injury or by production of self-inflicted injuries or by mis-statement of facts either to accuse some body or to shield some body. Besides these, one also frequently meets these cases of feigned diseases among policemen or soldiers who want to evade their duties, prisoners who want to avoid hard work, and persons who want to evade legal responsibility for their criminal conduct; and besides these, the growing consciousness of the people regarding compensation and allowances for injuries received in factories, etc. serves as an additional impetus for an increased crop of these fraudulent cases. Thus if one analyses these cases one comes to the conclusion that although *fraud* in the medico-legal practice might have been present right from the very birth of forensic medicine, one cannot help thinking that the increased number of these fraudulent cases is a product of modern age and a good proportion of these cases are nursed on account of the compensation act, the insurance policies, sick pay allowances and various other methods to repay the so-called injured.

Then there are those cases who are not malingerers in the true sense of the word but who, by the morbid contemplation of their condition, have caused their subjective consciousness to become so much exaggerated that they have made themselves the slaves of every abnormal sensation. These are the so-called psychoneurotics and it should be thoroughly understood from the very beginning that whereas the malingerer knows that he is cheating, the psychoneurotic thinks that he is genuinely ill, although both class of cases may not have anything organically wrong with them.

So that the duty of the doctor will not only be to find out that such and such injury or disability is a mere fake but also to judge from the behaviour and mentality of the patient as to whether he is a pure and simple case of malingering or that his complaints are an outcome of some psychological conflict. And although it is difficult to appreciate the difference between fraud and the mental condition which allows the idea of an illness or an injury to settle upon the mind as an obsession, it is fair to remember that in the later condition many of these pains although only psychic in origin are quite genuine and incapacitating and require to be properly treated and hence they should be given proper attention and sympathy. It is the persons of unstable nervous system who are incapable of making a stand against morbid introspection that are usually the victims of these and hence they should be classed differently from the group of pure malingerers.

Almost every variety of complaint has been shammed by malingerers but some of these are by far the commoner. In some of these cases it may be easier to detect the fraud, but in others it may be difficult to find out whether an individual is shamming or not.

In India the more commonly met, shammed diseases are the following:—

Cases of *feigned insanity* are sometimes met with in criminals who after they have committed a crime

*A lecture delivered to the medical officers during their post-graduate course (1935) in the King George's Medical College, Lucknow.

want to evade the legal responsibility by feigning a maniacal or a depressive form of insanity. Cases have occurred when these persons feigned insanity so successfully that they were able to deceive both the doctor and the judges. In majority of these cases if they are properly examined and kept under observation, the fraud can be easily detected. An insane person has the characteristic facial expression, behaviour and mental picture of the type of insanity he is suffering from and he maintains his excitement bizaree movements and peculiar delirium whether observed or not and does not appear to get tired or feel exhausted particularly in mania, whereas those who are feigning insanity are always anxious to attract the attention of others in whose presence their symptoms are at the height but as soon as they are left to themselves and when they realise that they are unobserved, they throw away the mask and take the much-needed rest. Thus in these cases where there may be some doubt, the best thing is to keep them under observation and pay them unexpected visits. This procedure will enable to catch the fraud easily.

Bruises are sometimes simulated by the application of the juice of Marking Nuts (Bhilawa). These can be easily spotted if carefully examined. Some evidence of the stain may be present under the nails of these persons and also owing to the local irritant properties of this substance, signs of irritation and inflammation *viz.* congestion and vesicle formation, etc. along with marks of scratching will be present on the surrounding as well as the stained area.

It is not uncommon to come across cases who have deliberately injured themselves. The bulk of these cases occur either in the hysterical persons who want to attract the attention of others or by malingerers or criminals who pretend that they have been injured. Sometimes self-inflicted wounds are produced for the purpose of extorting damages and it is a matter of common observation to see the professional self-mutilators (the so-called Mudchiras) who would produce several wounds on their bodies to get a few pice from a Bania (Shop-keeper).

These self-inflicted injuries can be easily detected. They are usually superficial and are generally present on those parts of the body which can be easily reached by the hand but are rarely found on the parts which contain the vital organs as, for example, over heart or abdomen. These are situated more commonly on the limbs, sides of the body and the neck and are usually multiple and superficial. They sometimes show a peculiar parallelism and very rarely show any bruising in their connection. Attention should also be given to the clothes of these persons, for after cutting themselves they sometimes attempt to make corresponding incisions in their clothes and thus under these circumstances there is almost certain to be some discrepancy.

Punctured wounds, which might simulate a dog-bite or a mad jackal-bite, were very commonly inflicted by the British soldiers in India, before the establishment of Pasteur Institute at Kasauli as all these soldiers alleged to have got these were sent to Par's for treatment with all the sick allowances etc.

Cases of artificial conjunctivitis are also frequently met with. It is produced by instilling the eyes with one or more of several substance, *viz.* tobacco juice, lime water, weak decoction of jecurity seeds, weak solutions of marking nut juice, powdered roots of various other plants, etc., etc. Most of these substances produce a purulent form of conjunctivitis and in the absence of gonococci or other suspicious signs of disease with the presence of some extra-material along with some evidence of a fraudulent motive, the fraud can be easily detected. Feigning a conjunctivitis is also frequently seen in Indian soldiers. The only difficulty that confronts in most of these cases of self-produced donjunctivitis is the acute exacerbation of an old standing trachoma, as the majority of these cases do suffer from a mild and chronic form of trachoma.

Alleged total or a partial *blindness* in one eye following an injury or an accident is also sometimes met with. It is not difficult to detect, specially if the examination is carried out by an experienced ophthalmologist. But suspicion of malingering may be raised, if the medical jurist finds a very well marked light reflex in an eye alleged to be completely or nearly blind.

Cases simulating nervous diseases are also sometimes seen. They often present a difficult problem. It is important to decide as early as possible whether the alleged symptoms are organic, functional or feigned but the real difficulty arises in those cases where all these three varieties or any two of them co-exist. A thorough and systematic examination of the nervous system will in most cases enable a medical man to distinguish between functional and organic nerve disease. There are certain signs which are inconsistent with functional nerve disease, so that the presence of one or more of these will definitely

indicate organic nerve disease. Some of these signs are:—

1. The absence of knee and ankle jerks.
2. Babinski's extensor response.
3. Argyll-Robertson pupil.
4. Hemianopia.
5. Marked muscular wasting when localised and associated with reaction of degeneration.

It has also been observed that the nerves of the face, tongue, eyes are very rarely affected in functional diseases and a paralysis, which after continuing for months neither becomes spastic nor shows any evidence of wasting, is very suggestive indeed of functional nerve disease.

Most of these cases of simulated nerve disease, both functional and feigned, come after some kind of accident and it is important in these cases to determine as to how much the damage is due to trauma and shock, how much to a faulty nervous system and perverted outlook and how much to mere fraud and deceit. Functional nerve cases can in most cases be easily distinguished from the organic nerve cases by a systematic examination of the nervous system but the difficulty only arises in distinguishing these functional cases from feigned cases and in these group of cases some strong suggestion indicating some heroic measure for diagnosis and treatment will help in unveiling the fraud.

Cases have been reported when the persons have claimed damages for the onset of epileptic attack after a particular accident, while all the time they were cases of simulated epilepsy and not genuine epileptics. It is only those persons who have had opportunity to observe persons in an epileptic seizure that can try to feign it. A layman may be easily deceived, but the doctor cannot be deceived if he is lucky to see the person in a fit, but in the majority of cases the attacks are arranged when the doctor is away. In these cases useful information got from reliable eye-witnesses along with careful examination of the patient will help in arriving at correct conclusion. The old and common device of producing froth by chewing soap and procuring blood by pricking the gums should, however, not be lost sight of.

Pain in the back is a common complaint met with both in ordinary and medico-legal practice. In the latter it is generally following an accident, a fall, etc. for claiming some compensation, etc. It is our duty to find out as to how far the pain is real, psychic or feigned. The patient should be asked to lie flat on his back with his heels, knees, buttock and shoulders touching the table. The natural forward lumbar curve is at once apparent in this position, which will disappear if the thighs are placed on the abdomen, unless fixed by disease or injury. A skiagram of the back will help to exclude any organic disease of the vertebral column, specially if taken into the two positions *viz.* (a) lateral view of lumbar spine in a normal erect position and (b) in leaning well backward position. This will definitely show the movements of the vertebral bodies if they are not fixed by disease by the diminution of the space between the posterior borders of these bodies and the increase of the space between their anterior borders.

Cases are sometimes sent for examination following accidents of trivial nature which has only flared up some latent disease so that in these cases it is the duty of the medical man to find out as to how far the injury was responsible for the disease. Such cases are met with among quiescent syphilitics, latent tuberculars and persons suffering from osteoarthritis and hereditary neurosis, etc. where the disease flares up after accidents. How far these cases are justified for claims is still a debatable question, and although the law is not clear on this point, it is a point of great subtlety for an injury which produces no untoward effect on healthy man results in serious consequences in a person previously diseased and both the legal and medico-legal significance need a proper definition.

Then there are those cases who exaggerate their trivial injuries in order to get more compensation for themselves or more punishment for their assailants. It is a matter of common observation that these persons are sometimes very keen for a simple injury to be labelled as grievous or grievous one to be labelled as dangerous, but in these cases no deception can work and a careful examination will always reveal the proper facts.

Cases are sometimes brought to a medical man for the opinion of the age of a person and here very often the minor wants to be declared as a major or a major is keen to become a minor, whichever may serve his or her end. But in these cases a routine examination of teeth, general configuration and a proportion of height and weight of the person along with other signs of minor importance will help to form an approximate idea about the age of the person. In doubtful cases skiagram showing the extent of

ossification in different places will be an additional help.

These are some of the types of fraudulent cases that are met with in medico-legal practice and besides these there may be various other types of cases, but in most of these doubtful cases the following procedure will help to reveal the fraud and arrive at a correct decision :—

1. A thorough examination of the patient both subjective and objective.

2. Keeping the patient under observation in an institution (hospital).

3. Try to find out the motives of deception.

4. Pay the patient unexpected visits.

5. Special methods for detecting the fraud varying according to the type of the case.

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MEDICAL EXAMINATION OF LIVES AND USUARY BY AGENTS

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Having been a medical officer for a couple of decades for over a score of Life Offices, Indian and Foreign, and having hobnobbed with a grocer's gross of Life Agents and canvassers, good, bad and indifferent, I am tempted to tackle the problem of Insurance Agents and their uncanny domination over Medical Examiners and the unholy grip of their patronage fenced by the amount of rebate allowed from the medical fees of doctors.

Mr. H. C. Ghose classifies in " Indian Insurance " medical examiners appointed by insurance companies into three classes:

(1) One class, strictly honest, never flinching an inch from the right path, conducting the work of medical examination with admirable scrupulousness, ignoring outright the frowns or favours, threat or insult of agents. All praise to this class, who represent the ideal than the real, and whose noble race bids fair to become extinct under the frowns, fines, threats and insults of the veritable Czars, the Canvassers.

(2) There is another class of doctors whose ideals of purity and honesty are apparently as keen as those of the first class, but who at the time of actually carrying out the work of examination, cannot maintain those ideals as strictly as they contemplate, but at the same time are careful to see that the interests of the company do not on the whole suffer. It is this struggling class that requires the utmost sympathy and square dealing. The General Practitioner in private practice not having State pension to fall back upon cannot discard with impunity the patronage of the designing agent by a too meticulous adherence to his ethics and is constrained to allow a rebate on his medical fees to the agent in preference to defraud the Company by passing an unsound life. As the agents get a start with this dent on medical morality made by the harrowing hammer of hovering competition the downward course gets facile in falling gradient and the medical examiner comes into the third class of medical examiners who are very obliging and to whom honesty of work is an exception and its abuse the rule and to whom, practically speaking, a measuring tape of five feet length is the only equipment, etc., in the jeering phraseology of Mr. Ghose.

That the third class of medical examiners is the logical sequence of arbitrary patronage of the insurance agents who lord it over the medical men is a pertinent point missed by Mr. Ghose.

The medical man has been the butt of ridicule and the elusive agent escapes scot-free the indictment. A five feet tape is a sartorial equipment and not medical equipment and so self-respecting doctor shall stoop to carry on this "pivot of the mechanism of Insurance " only with a Tailor's Tape. Such doctors represent medical profession exactly as the " Three Tailors of Tooley Street " do.

If shallow and bad business to a considerable extent has found its way into the total volume of business secured into the Insurance Companies in India, it is due to unscrupulous agents and their Tammany Hall tactics in putting in business and the impious and unholy competition between rival companies. The tricks and temptations played by the " Insurance Bores " are common knowledge of the public and the helpless medical examiner is a passive spectator in the piece.

The doctor is by no means the " villain of the Piece " as essayed by Mr. Ghose and the public know who is the arch maker of the tragic repercussions of Insurance business on their Finance and Investment.

A touring Officer appointed by an Insurance Company to check the various abuses and bad practices on this matter of medical examination may prove another aggressor on the already belaboured medical examiners and this remedy is worse than the malady since it is difficult to find a " judicial robot " to hold the scales even between the interested agent and the obliging doctor.

Most Insurance Companies have already cut the scales of medical fees on the plea of depression and the balance of slender fees is attenuated by rebates allowed to patronising agents. Equipment for medical examination of lives is already assuming huge proportion and becoming more expensive and a well-known company has already circularised its medical examiners to take blood pressure on each life irrespective of age or amount assured.

Under these harrowing circumstances, the Life Insurance Companies must exercise scrupulous care in selecting their agents on the criterion of integrity and honesty and allot a ratio of distribution of cases for medical examination amongst the various medical examiners in the area on an equitable basis, putting an effective check on the agents' arbitrary patronage of the doctor which alone ensures efficient examination.

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PREVENTION OF BLINDNESS

The Census Report of India records that there were 6,01,370, totally blind persons in this country in 1931, and this comes to about 172 per lakh of the total population. They are distributed unevenly in different provinces. Thus in Ajmere-Merwara, the figure is 386 per lakh, 291 in the United Provinces, 282 in Rajputana, 245 in the Punjab and only 73 in Bengal. The census figures are never very accurate in this country but the returns of blindness have generally been regarded as comparatively accurate. Whether it is underestimate or overestimate, it is difficult to gauge. Our experience in hospitals supports the former. Instances are not rare where persons, whose vision, is reduced to finger counting within a foot distance would report themselves as having slightly diminished vision. Patients with dense leucoma or staphyloma do not consider themselves blind on the ground that they can count their own fingers with hands up. Such instances are not scarce and are seen mostly in aged people in whom the prevalence of blindness is largest.

THE FIGURES ARE:—

	Males (per 10,000)			Females (per 10,000)		
Age	1931	1921	1911	1931	1921	1911
0— 3	297	265	317	203	201	226
5—10	474	549	657	290	357	366
10—15	506	581	599	307	342	376
15—20	471	464	541	313	301	457
20—25	501	480	604	350	360	510
25—30	505	546	646	418	433	646
30—35	502	600	687	457	547	507
35—40	569	531	546	581	507	831
40—45	610	693	775	626	756	549
45—50	734	571	538	812	597	1027
50—55	753	904	915	846	1038	457
55—60	910	535	442	1108	629	3563
60 & above	3168	3281	2833	3679	3931	

A perusal of the report would reveal that the incidence of blindness is on the increase in most parts of India and a large proportion of it is preventible. The problem of blindness in India, therefore, should receive a most careful consideration.

Unlike countries like Denmark, Austria, Switzerland, England, etc., India is a vast country where one part differs from the other to a great extent both meteoriologically and geographically, and it is not only natural but is a fact that such wide variation considerably influences the incidence of eye affections in different parts of India. The common factors, however, such as illiteracy, ignorance, poverty and malnutrition prevail everywhere, from Cape Comorin to Nanga Perbat and from Dwarka to Sadia. Under the circumstances it is essential to find out the cause of blindness in different provinces.

Unfortunately, the official reports published by the provincial Governments do not show any classification of the eye diseases but only records the number of cases treated for eye diseases. The only source available for ascertaining the nature of causes of blindness are from the records of eye hospitals. None but the Madras Government Eye Hospitals publishes such reports. The result is we have no knowledge of the true state of affairs.

Coming to the actual cause of blindness we find that the method of ophthalmic medical relief is inadequate in most muffusils and villages.

It is hardly realised by the lay public, official or non-official, the importance of early institution of treatment of eye diseases. A delay of a few days and in rare instances, even of some hours may render the eye functionally useless.

The present system of centralization of the ophthalmic relief is extremely unsuitable in country like ours where people are not only extremely poor

and ignorant but there is lack of quick transit facilities.

In spite of the fact that centralization retains a high standard of treatment it is unsuitable so far as eye relief is concerned under the present circumstances. Decentralization is absolutely necessary. It is regretable that no proper facilities are found in the district towns for proper ophthalmic relief. One can imagine the condition prevailing in rural areas. It is no wonder, so many eyes are lost from agricultural injuries for lack of even what one may called ' the immediate first aid ' to the injured eyes.

In Western countries like England, and America, voluntary organisation has succeeded in doing the difficult task of prevention of blindness in an admirable way and State Departments of Health have materially helped them in every possible way. In India, the beginning has long been made in Western Presidencies in 1919 through the formation of the All-India Blind Relief Association at Bombay. Its achievements are well-known to the medical men of the Province.

Recently we have received a copy of the fourth annual report of an organisation known as the Association for Prevention of Blindness in Bengal.

It has come into existence due entirely to the efforts of Lt.-Col. Kirwan whose untiring patience in nursing the infant institution during the most critical period of its existence has developed it into its present prominence.

All credit goes to him for this honorary service to the people of Bengal whose only reward is soul-satisfaction. From the report in question, we find that the propaganda against blindness has been carried on through the demonstration of posters, films, lectures and pamphlets and a scheme has been worked out for a travelling dispensary of the Egyptian type which has proved so successful there. The start has been delayed for want of funds. Eminent social workers and philanthropists have joined the Committe of the organisation and it is hoped that funds would be soon forthcoming.

It is refreshing to find that Education and Health Departments are co-operating with the organisation in its laudable task. Besides the recent innovation of training, some of the members of the Provincial Medical Service as resident medical officer in the eye hospital and then shifting them to distant towns is a move in the right direction though the process is naturally slow.

In conclusion, one might point out that enumeration of blind could be efficiently done in future censuses of enumerators are taken from people with some medical training. Next a proper classification of census for blindness based on facts and figures ought to be undertaken in all the provinces. Both Government and non-official institutions where eye diseases are treated, ought to publish detailed reports as is done by the Government Eye Hospitals in Madras.

Creation of centres for eye treatment in the distant towns by appointment of part-time workers with special training and proper equipment of the Government-managed hospitals is recommended. This would ultimately create a demand for specially trained private practitioner. It would take some time to institute this change in the system for financial reasons and in the meantime travelling dispensaries ought to be started immediately with the help of funds from District Boards and Municipalities.

MODERN THERAPY IN GENERAL PRACTICE

THE TREATMENT OF ANGINA PECTORIS

K. SHIRLEY SMITH, M.D., B.SC., F.R.C.P.

A patient who genuinely experiences very severe pain in the centre of the chest most probably has some form of angina pectoris. This pain is the expression of myocardial ischæmia, which is the outcome of disease or derangement of the coronary arteries. If the arrest of blood supply is permanent, infarction of the heart muscle takes place and the pain is prolonged for hours or days (coronary thrombosis). During exertion the heart muscle requires extra blood, and if through disease of the coronary arteries this demand cannot be met temporary myocardial ischæmia results and anginal pain is experienced; this pain disappears with the cessation of effort, and is therefore known as angina of effort. Sometimes paroxysmal anginal pain arises independently of effort, but it is then associated with some factor that might be regarded as the equivalent of effort, such as a large meal, or a fit of anger, or a sudden change in the temperature of the environment. Paroxysms of this kind are suitably referred to as spasmodic angina, or as angina decubitus if the attacks take place at night. A consideration of the syndrome of coronary thrombosis is beyond our present purpose. Of the other forms of angina, effort angina is by far the commonest; it will therefore receive primary consideration here.

Whatever its severity, anginal pain has invariably a continuity that distinguishes it sharply from the stabbing or pricking pains over the left mammary region which have no constant relation to effort and do not represent myocardial ischæmia. Anginal pain has a tendency to radiate into the throat, to the left shoulder and arm, and sometimes to both arms, even reaching the fingers. Unusually, radiation may involve the jaw, epigastrium, or scapula. Any conjunction of events that conduces to relative myocardial ischæmia may play a part in the production of anginal pain. Thus an emotional disturbance or any form of rapid action of the heart may be as potent as physical activity to invoke pain, while anæmia or hypoglycæmia serve as well as coronary sclerosis to starve the heart muscle.

General Regime

The decision that a patient is suffering from angina pectoris commits the physician to a complete review of the patient and his mode of life. This includes work and recreation, hours of rest, diet, habits and temperament. The scheme of treatment should therefore embrace these factors in a suitable regime. It should also include preventive measures and the means of treating attacks. Finally, it should seek to control associated or contributory disorders.

The treatment of angina pectoris consists in a mode of life rather than a therapeutic system. Every modification in the daily life of the patient has as its object the avoidance of the pain. In milder grades of the malady the patient is allowed to pursue such activities as do not result in pain. It is often found that the amount of exertion necessary to induce an attack is remarkably constant, and the intelligent individual quickly learns to keep within the limits of pain-production. He should be warned to avoid those activities which might compel unwonted exertion, such as country expeditions and the care of children. All forms of strenuous activity —running, swimming, rowing, lifting, and the like —should be absolutely forbidden. Inquiry should be made into the business and domestic affairs of the patient, and, as far as possible, all sources of worry, anxiety, and fatigue should be removed. Sometimes it is found that the hours of rest are insufficient; ten should be a minimum. The patient should be taught to relax his muscles purposefully when resting, and to divert his mind, if necessary, by suitable reading, from the cares and worries that so often aggravate the condition.

Diet. There is no need to limit the diet in any way that is irksome or obtrusive. Moderation in a general dietary is to be advised. Meals should be small in bulk and taken with a minimum of fluid. In the spare, active type of patient a table-spoonful of the medicinal glucose, taken in powder form with the principal meals, serves as extra nutrition for the

heart muscle. In general, alcohol is best avoided, but the patient who sets store on a glass of sherry or white wine with meal, or who finds that a whisky at night promotes mental relaxation and sleep, may derive more harm than good from abstinence. Exercise after a meal is particularly apt to induce anginal pain; sitting for half an hour to an hour after food is a good rule for all anginal subjects, and especially for those in whom the taking of food predisposes to pain. When it is recognised that a change of temperature brings on an attack, the bedroom should be warmed both before retiring and before rising. Cold winds are especially to be avoided by these patients.

Rest. Confinement to bed for a period of two or three weeks is indicated in the following circumstances: when the attacks are becoming more frequent or more severe; when nocturnal attacks supplement angina of effort; when there is suspicion that the anginal syndrome had a recent origin in coronary thrombosis; when there is evidence of active myocardial disease (for example, frequent premature contractions or various grades of heart-block); when associated diseases such as syphilitic aortitis or an anæmia exist. It is advisable sometimes to send the patient—if his financial status allows it—on a holiday of three to six months in a warm but not hot climate. This is specially advisable if the disease is of recent onset and if it is suspected that the occupation or environment has contributed to the development of the syndrome in a highly strung patient; also if the anginal syndrome dates from an acute coronary occlusion. In the latter event the patient has, in any case, a month or two to spend before he can be allowed to resume even partially the physical and mental stress of his occupation.

Medicinal Treatment

Medicines may be administered as treatment in an attack, as means of preventing attacks, and as remedies for individual symptoms.

In an attack

An " attack " often consists merely in the development of a premonitory pain or sense of constriction during exertion. The patient should at once discontinue the effort and, if possible, sit down; he should chew tablet of trinitrin 1/100 grain and allow it to dissolve under the tongue. These measures usually bring relief within a minute or two; if not, another tablet should be taken.

The pain may in severer cases develop more suddenly or become rapidly intense. The same principle of immediate rest applies, but nitrite may be more advantageously inhaled. A capsule of amyl nitrite (5 minims) is crushed and drawn. The pain should then abate within a few seconds, and at the same time the patient experiences a sensation of heat in the face, throbbing of the head, and sometimes dizziness. Patients should be warned of these collateral effects before being given the first inhalation of amyl nitrate. When no nitrate is available, whisky or brandy, may give considerable relief, and they may also be used if the patient shows any degree of collapse or faintness after the attack. If an attack persists for an hour or more in spite of nitrites, coronary thrombosis has probably occurred; the patient should be put to bed and given an injection of morphine 1/4 grain

To prevent attacks

The success or otherwise of a patient in warding off attacks of effort angina is in direct proportion to his intelligence and care in following the prescribed regime. The pain is so often related to a particular amount or exertion, and even confined to a certain time of day, that a wise patient has a fair prospect of preventing attacks. But whatever forethought or care the patient exercises he is never free from the possibility of spasmodic attacks at any time, and he should therefore always carry one or two capsules of amyl nitrite and some tablets of trinitrin. The latter deteriorate with keeping, and fresh supplies should be obtained every two months. If the patient feels he must undertake some activity that is apt to bring on the pain, he should take one of the trinitrin tablets a quarter of an hour in advance. If the patient is subject to pain at certain times of the day, despite his usual precautions, he should take trinitrin before those times. Such medication may be given from three to a dozen or more times in the day. By this means the patient may be able to follow quiet activities and lead a useful life, whereas otherwise he would remain gravely incapacitated, tied to his house, if not to his room. This therapy may not safely be regarded as a licence for unnecessary activities.

Another drug that is known to produce dilatation of the coronary arteries is theobromine sodium sali-

cylate (diuretin). This may be given as a routine in doses of 10 grains thrice daily; it is perhaps specially indicated when coronary sclerosis is attended with infrequent bouts of anginal pain. When the patient is highly strung, and there is a prolonged neurogenic element in the attacks, the combination of 5 grains of theobromine with half a grain of sodium luminal is often valuable.

For other symptoms

Apart from those medicaments directed to producing coronary dilatation, the patient may need treatment for associated disorders of function. If he is of nervous and excitable temperament, a routine sedative such as a draught combining 10 grains of potassium bromide with 1/2 grain of luminal may be given on retiring or twice daily. This will enable the patient to tolerate the extra hours or rest which have been advocated in the readjustment of his regime. For insomnia this draught may be effective, or, alternatively, 20 grains of potassium bromide with 10 grains of chloral hydrate. Chloral hydrate (20 grains) or syrup of chloral (2 drachms) offers the best prospect of relief from angina decubitus.

Flatulence or gastric distension seems frequently to predispose to attacks of angina pectoris. A pill containing calomel $\frac{1}{6}$ grain, menthol $\frac{1}{4}$ grain, pulv. zingib. $\frac{1}{4}$ grain, and taken thrice daily after meals is then useful. The treatment of constipation is important, since many patients experience attacks through straining at stool. For constipation that is more than occasional it is best to employ a regular lubricant, such as paraffin emulsion half an ounce twice daily with or without phenolphthalein 1 to 3 grains. Senna tea or cascara evacuant may be given in more obstinate conditions.

Drugs to Avoid

Smoking is unwise for those who suffer from angina. In some syndromes it is clear that the use of tobacco increases the frequency and severity of the pain. For these patients and for those who have chronic cough smoking should be forbidden. On the other hand, there is less to be said for abstinence in those who have gained no benefit from it during a period of some months.

There are certain drugs that may be dangerous if given to anginal patients. Adrenaline, ephedrine, and thyroid, even in small doses in some subjects, increase the rate and force the heart to beat. The myocardium will consequently demand increased blood supply, which the coronary arteries may not be able to provide. These drugs are therefore apt to provoke anginal pain.

Treatment of Associated Disorders

Apart from the measures designed to prevent attacks or to alleviate other symptoms, there are frequently associated disorders which urgently need correction. Such collateral conditions may exert a harmful influence in that they throw an additional burden on the heart; to this group belong obesity with frequently attendant flat feet; high blood pressure; and thyrotoxicosis. Other associated abnormalities, such as anæmia and hypoglycæmia, render the patient specially liable to attacks by enfeebling the nutritive power of a myocardial blood supply already reduced in volume.

Obesity offers special difficulties of treatment in the subject of angina of effort. Exercise and thyroid medication are alike contraindicated. Dieting alone remains. The patient should be instructed to avoid fried foods, gravies, and sauces; to take no sugar in beverages, no food at tea-time, no bread except at breakfast, and no food between meals. He is advised that lean meat, clear soup, fish, chicken, green vegetables, and fruit are not fattening, and should form the bulk of the diet. Flat-foot and other minor foot troubles that may result from obesity constitute not only a source of peripheral irritation but a definite extra load on the heart. They therefore demand correction. The elimination of septic foci may turn out to be of importance. Sources of gross sepsis, such as dental caries, pyorrhœa, and sinus or tonsillar infection, demand judicious removal at an early opportunity.

High blood pressure commonly exists in those subject to angina. The regime, dietary, and medicaments already mentioned in the treatment of the anginal patient are those which may also help to lower the blood pressure. When the pressure remains persistently at a high level venesection (20 ounces) is indicated, and may be repeated at intervals of three months if it confers benefit. When a patient suffers from angina and thyrotoxicosis, thyroidectomy may be the only means of giving relief and improving the effort of tolerance. If this operation is performed the surgeon should aim at

complete removal. The resulting myxœdema can subsequently be corrected by suitable thyroid medication. If angina pectoris and diabetes occur in the same patient the coronary syndrome should first receive attention. It is wisest not to interfere too much with the diabetic condition, and the patient is safer passing small amounts of sugar with a mild hyperglycæmia. The attempt to abolish glycosuria and hyperglycæmia by the use of insulin in these patients has many times brought infraction of the heart or sudden death. The last, but by no means the least important, contributory factor is anæmia. The cause (or colour index) of the anæmia is immaterial from the standpoint of anginal pain. For pernicious anæmia the usual liver therapy should be instituted. For the microcytic or nutritional types, pil. ferri 30 grains thrice daily, or iron and ammonium citrate 40 grains thrice daily, will be suitable medication.

Surgical Treatment

From time to time certain surgical procedures have been advocated for the relief of angina pectoris. Paravertebral injections of alcohol are said to yield good results. Cervical or dorsal sympathectomy has also been followed by improvement in some cases. These, and other surgical procedures, are still largely in an experimental stage and will not be further considered.

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CURRENT MEDICAL LITERATURE

MEDICINE

Treatment of Cholera with a New Anti-Cholera Serum

By anærobic culture for 18 hours in special broth H. Ghosh (*Brit. Med. Jour.* Jan., 1935) had obtained a toxic filtrate which was capable of producing, by repeated small intravenous doses in rabbits, a cholera-like diarrhœa. Horses have been immunized with this toxin in doses as high as 500 c.c. The serum obtained, when concentrated afforded an agglutinating titre of 1—12,000 "H" agglutinin and 1—16,000 "O" agglutinin. "A previous injection of serum prevented experimental production of choleric diarrhœa with the toxin in laboratory animals." Now the opportunity has occurred of testing the serum in human beings. By intravenous injection the serum did not prove entirely satisfactory except in mild cases of cholera. The author then adopted the intraperitoneal route of administration in a dose of 30 to 40 c.c. serum, diluted with 200 c.c. warm normal salt solution. A single saline transfusion was given on admission of a patient and then serum. The results obtained in a limited series of cases were:—4 deaths in 32 treated with serum and 15 deaths in 57 cases treated without serum.

Malaria in Calcutta is Attributed to the Poor Water Supply

R. Knowles & B. C. Basu (*Ref. Trop. Dis. Bull.* June, 1935) give in this paper the results of observations carried out in an area, one square mile in extent, around the School of Tropical Medicine in the centre of Calcutta. "Malaria is not apparently a very serious danger to Calcutta city, but we have already one virulent carrier—*Anopheles stephensi*—breeding in almost every other water storage receptacle in the city, together with the recent introduction of a second, and, even more virulent carrier, *Anophelse sundaicus* (*A. ludlowi*) The future is quite uncertain." *A. stephensi* breeds for the most part, in vessels which are used for storing waters; *Aedes ægypti*, the carrier of dengu, and *Culex fatigans*, the carriers of filariasis, breed in the same places as *A. stephensi*. The low pressure and intermittent character of the water supply are responsible for the prevalence of mosquito-borne diseases in Calcutta. The remedy is the provision of a continuous water supply at high pressure.

Studies on Benign Tertian Malaria. Some Observations on Inoculation and Onset.

Schaudinn's statement that sporozoites enter erythrocytes is disputed by Boyd & Stratman-Thomas (*Amer. J. Hyg.* 20:2, 1934).

Excision of the bite of a few minutes after the application of an infected mosquito did not prevent infection, and the authors conclude that sporozoites must therefore be injected directly into the blood-stream.

Sporozoites can gain access to the blood vessels by penetrating the tissue, as was shown by applying infected mosquitoes to a blister raised by cantharides.

Schaudinn stated that he had observed the entry of sporozoites into erythrocytes, and their transformation into trophozoites. This observation has never been confirmed. A patient, "B" under the author's care, was bitten by 15 heavily infected mosquitoes; on the same day and on each of the succeeding 9 days 10 c.c. of his blood was inoculated into a series of susceptible persons. None of the series inoculated before the 9th day became infected, those inoculated on the 9th, 10th and 11th days became infected and parasites appeared in the blood of patient "B", parasites could not be detected earlier than the 8th day following inoculation. This does not support the view that sporozoites invades the erythrocytes and thus directly initiate schizogony."

It is sometimes desirable to distinguish between a primary attack of malaria and recurrence. In areas of low indemicity, the authors have found that the onset of a recurrence is distinguished from the onset of a primary attack by a greater number of parasites and a palpable spleen, but where there is a great deal of malaria and more than one strain of parasites, these criteria are not very helpful. As regards the onset of the attack; in 37 per cent. parasites were found before the fever; in 37 per cent. fever occurred

before the parasites; and in 26 per cent. both parasites and fever appeared on the same day.

Liver Function in Acute Malaria

H. Ruge (*Arch. Schiffs. u. Trop. Hyg.* 39:1, 1935) notes that most liver function tests have been made in old and chronic cases of malaria. With the object of supplementing our knowledge he investigated two cases of natural malaria, two cases artificially infected by mosquitoes and nineteen cases of inoculated malaria, all showing acute symptoms and infected with *Plasmodium vivax*. The blood sugar was estimated after administration of 40 grams lactose.

As a result of his observations the author concludes that the disturbance of the liver function in acute malaria increases as the attack proceeds. The damage is shown by the rise of the blood sugar curve after administration of lactose to over 30 mgm. per cent., the increase of the nonprotein nitrogen, the occurrence of an indirect positive van den Bergh reaction. Under treatment with atebrin the changes in the blood chemistry returned to normal limits.

The Prognosis in Malaria Infection

This excellent article by P. Manson-Bahr (*Lancet*. Dec., 1934) should be read in full; only a few points can be dealt with here. Dr. Manson-Bahr holds the view of most workers in the tropics that "In all forms of malaria as in other protozoal infections, the earlier and the more energetic the treatment, the greater the hope of effecting a permanent cure." Not everyone will agree with him when he says "Apart from its disagreeable habit of manifesting relapses at odd and often unexpected intervals, benign tertian malaria cannot in any sense be regarded as a menace to life." He puts the life span of the benign tertian parasite at 3 or, at the most, 3¼ years, that of subtertian at about 9 months, and that of quartan at anything up to 5 or 6 years. He points out that the parasites of subtertian malaria have acquired the property of lying low and of springing into activity, precipitating sudden catastrophes, even death, by accumulating in the capillaries of the internal organs, so producing acute pancreatitis, dysentery, cerebral attacks, malarial amblyopia (a result of malarial infection of the retinal vessels) and many obscure symptoms "These major and tragic aspects of subtertian malarial infections are more liable to be seen in the non-immune person i.e. the tenderfoot on his first visit to a malarious country."

Blackwater fever, on the contrary, seldom develops during a first infection; the longer a person is infected, the more liable is he to develop it. It is the worst feature in the prognosis of subtertian malaria, for the mortality of the disease is about 25 per cent. It may appear at any time from the day of arrival in England up to 9 months after arrival, when the liability disappears. Attention is drawn to certain mental conditions which may resemble encephalitis lethargica, and "are produced by small subcortical hæmorrhages which, if not immediately fatal, leave behind them disseminated malarial granulomata which represent the organization of the minute hæmorrhages." The author considers that "it is now possible to exterminate this parasite (subtertian) in the blood with adequate doses of atebrin, with quinine perhaps as an adjunct, in a way never formerly anticipated; it is possible to prevent entirely the recurrence of relapses."

Treatment of Leprosy Intravenously by Methylene Blue

This important paper by L. R. Montel (*Bull. Acad. Méd.* 112:30, 34, *Ref. Trop. Dis. Bull* May, 1935) records the results of nine months' trial in 172 lepers of the author's method of intravenous injections of 1 per cent. neutral methylene blue sterilized by heating on three consecutive days for one hour at 80°C at which temperature febrile reactions are less frequent than at 120°C.

The first dose is 5 c.c. increased at each injection to the limits of tolerance, which is usually between 25 and 35 c.c. and given three times a week up to 18 doses, and the courses repeated after intervals of 20 days. All the dermal leprous lesions retain the dye and stand out clearly so that the injection may be of diagnostic value as regards slight lesions. The first effect is the cessation of neuralgic pains with improved sleep and appetite and general condition. In a few cases fever results with congestion of the skin lesions followed by retogression. Further extension of the lesions is arrested and thickening and œdema subside. The drug does not cause albuminuria. Recent lesions subside first with intense desquamation of the skin. Infiltrated patches may take four months for the thickening to disappear and the older lesions may take still longer, especially actual nodules, and after eight months' treatment only partial subsidence of old fibrous nodules has been observed. On the other hand, ulcers, blisters, etc., heal rapidly and cease to

discharge lepra bicilli and perforating ulcers are also very beneficially effected, nine out of ten such ulcers having healed in from two weeks to three months. Equally important is the frequent cessation of the discharge of lepra bacilli from the nose, greatly diminishing the infectivity of the patients. In nerve cases, in addition to the cessation of pain, the extension of the skin lesions is arrested and the thickened edges of tuberculoid lesions and thickening of superficial and trunk nerves subside. The treatment has thus been beneficial in all types of leprosy and it can be combined with chaulmoogra oil medication during the intervals in the methylene blue injections with advantage.

On the Use of Fluorescein and Phthallic Acid in Leprosy

A. Gordon Ryrie (*Internat. J. Leprosy* 2:2, 1934; *Ref. Trop. Dis. Bull.* May, 1935) records that the most stable results obtained from the intravenous injection of various aniline dyes followed the use of fluorescein in sixty-four cases treated for four months. In about 60 per cent. clinical and microscopical examinations of the lesions showed a greater or less specific response, but the improvement rate dropped to 43 per cent. on continuing the treatment for four months. In order to ascertain which constituent of the dye was effective nine cases were treated with one of its constituents, resorcin blue, with negative results, but in 16 patients treated for two months with intravenous injections of another constituent, phthallic acid, greater or less response was observed in 62 per cent., so this is considered to be the active part of the dye. It is noted that hydnocarpus esters appear to be better tolerated after a course of fluorescein, but that very little evidence was obtained of the beneficial effect of the dye in advanced cases of leprosy.

Some Unusual Forms of Plague

A. W. Williams states (*East Afr. Med. Jour.*, 11:7, 1934) that in an area where bubonic plague is endemic and where, consequently, pneumonic or septicæmic plague can occasionally occur, there is always the liability of admission of unsuspected cases to hospital. That is highly dangerous for fellow patients, when the case is one of pneumonia. "In any blood infection the clinical picture varies according to the system on which the brunt of the infection falls—hepatic, pulmonary, meningeal—a fact well illustrated by the records of these five cases." The five patients were admitted with symptoms resembling (1) toxic jaundice of yellow fever type, (2) primary meningitis, (3) pneumonia with delayed resolution and recovery, (4) in two cases, lobar pneumonia. The lesson to be drawn from such occurrences is that the sputum of all cases resembling pneumonia ought always to be examined for *P. pestis* whenever an outbreak of plague occurs or in an endemic area, as soon as the patient presents himself for admission.

Simple Technique for Diagnosis of Plague

A simple technique for diagnosis of plague with material sent from a distance has been tested by G. Girard (*C. R. Soc. Biol.*, 117:32, 1934; Ref. *Trop. Dis. Bull.*, June, 1935). In the case of a patient the bubo is repeatedly punctured with a syringe, which is well washed out after each puncture with sterile normal salt solution. In the case of a dead body the same procedure is gone through, but it is the lungs or liver which are punctured. A suspension is obtained from the washings and this is inoculated by friction on the shaved and scarified skin of the guineapig. Material obtained 3 to 10 hours after death in the animal experiments was capable of causing acute plague, up to a minimum of 6 days, when kept at a temperature of 16° to 26°C. If kept at 37°C the infective period was reduced to 3 days. If the animal had been dead 48 hours (local temperature 21°C) and putrefaction had set in, the suspensions were only virulent for 24 hours, the organs for 3 days. These animal experiments have been confirmed in actual practice with material sent to the laboratory from distant parts.

A Case of Cat-bite Fever

Beaumont and Gill (*Brit. Med. Journ.*, 1935, 1, p. 582) report that a girl aged 14¾ years, was bitten by a cat just above her ankle. Nine days later the leg began to swell, broke down and discharged watery exudate. For 5 days she had a temperature. From this time onward she had periodical rises of temperature with drowsiness, stiffness in arms and legs, and a rash which appeared first as two cuvred lines on the forehead, and later as circinate areas on face, arms and trunk, white in the centre and surrounded by bluish red-erythematous zone. Three injections of neokharsivan were given, with rapid fall of temperature. Swellings then appeared in the arms, forearms,

in the triceps and extensor communis and in the right great pectoral muscle, with rises of temperature, which were again controlled by "606." The Wassermann reaction was first of all negative, and when the swelling appeared, strongly positive. The muscular swellings are interesting, and have not been previously described.

Allergic Enuresis

Dr. G. W. Bray showed before the Royal Society of Medicine (*Br. J. Child. Dis.*, June, 1935) a girl aged 6½ years, who was referred for investigation on account of (i) persistent bed-wetting every night, with frequency and occasional lapses during the day, never having control of micturition, (ii) papular urticaria since the age of 18 months and (iii) pain in the epigastrium after meals, relieved by defæcation.

Past History—Whooping-cough at 6 months, chicken-pox at 18 months and measles at 5 years.

Family History—The mother suffered from migraine; as a child she had diurnal incontinence, and had experienced rather precipitate micturition since. Her Wassermann reaction was positive until 1925, since when, as the result of treatment, it had been negative. The eldest daughter, aged 11 years, had a positive Wassermann reaction and was treated accordingly. She suffered from nocturnal enuresis until after the fifth year and still had occasional lapses. The second child was the patient. Before her birth the mother had further treatment and the Wassermann reaction had always been negative. The third child was a boy, aged 2 years, whose Wassermann reaction was also negative.

The patient had been treated with the usual dietary restrictions, the limitation of fluid intake, and had been taken up at specified intervals to pass water. In spite of this the bed was always wet and improvement was lacking.

In previous cases investigated the association of enuresis and papular urticaria had been noted and the allergic basis of each verified. Skin reactions in this case showed a pronounced hypersensitiveness to the pork, ham, bacon, and lard group of foods. The mother was instructed to remove these from the dietary as far as possible, and at the same time ephedrine was given in ½ gr. doses at bed time. In two months the dose was reduced to ¼ gr. and at the end of the month would be discontinued.

As the result of this line of therapy there was a practically immediate disappearance of the spots, and during the first month the bed was only wet on six occasions, during the second month twice, on no occasion during the third month, only once during the fourth month during a very severe cold, and on no occasion during the fifth month.

NUTRITION AND DIETETICS

Infection in Vitamin Deficiency, with Special Reference to the Origin of Acute Infective Osteomyelitis

R. Takahashi (*Arch. klin. Chir.*, 118:103-123, 1934) deducted the following conclusions from his experiments.

Both guineapigs and rabbits were more susceptible to injections of staphylococci when previously kept on diets deficient in the vitamin B complex or in vitamin C. Deficiency of B vitamin did not, however, cause any increase in the number of abscesses found in the muscles, as claimed by Osawa. Young rabbits and guineapigs, on diets deficient in vitamin C, tended to develop abscesses at the ends of the long bones, especially the ribs. In normally fed young animals foreign substances introduced into the circulation were retained in the metaphyses of the long bones longer than in adult animals, but, in young animals kept on diets deficient in vitamin C, they were retained still longer. It is suggested that this stagnation, accompanying deficiency of vitamin C, may be a mechanism explaining the occurrence of acute osteomyelitis.

Milk and Metals

Samples of milk taken by W. Grimmer (*Dairy Res. Inst., Königsberg*, 16:435-439, 1934) from three cows between July and November and mliked straight into glass vessels, showed an Fe content of 0.40 to 0.67 mg. per litre and a Cu content of 0.19 to 0.34 mg. per litre. For the milk from one goat the values were 0.50 to 0.64 and 0.23 to 0.29 respectively. Figures are given showing the increase in Fe content when cold or hot milk is poured into well used tinned iron cans and left to stand and also the values for Fe and Cu content for samples taken at the various stages in the commercial cremery process. Analysis of cream and separated milk obtained by spontaneous creaming or centrifugal separation lend no support to

the view of Glikin that the Fe in milk is present as lipoid Fe.

Vitamin A Determination: Relation Between the Biological, Chemical and Physical Methods of Test

K. C. LATHBURY (*Biochem. J.*, 28:2254:2264, 1934—Ref. *Nutrition Abs. and Rev.*, April, 1934) states that when cod-liver oils were fed to rats deprived of vitamin A, in doses diluted proportionately to the intensity of the blue colour developed in the $SbCl_3$ reaction, the resulting weight increments approximately corresponded but when the dosage was based on the blue values after saponification of the oils, the correspondence was closer. A highly active liver oil was more active than a concentrate of it, when both were diluted proportionately to their "blue values."

The ratio between the biological value, and the blue value on the non-saponifiable fractions, was for natural oils twice as great as for concentrates, while Crews found that the ratio of the blue value to the absorption co-efficient (E^1 per cent. 1 cm 328 m) was, for natural oils, half that for concentrates (see also Abst. 110, Vol. 4). Hence it would appear that E^1 per cent. 1 cm. 328 m , should be directly proportional to the biological value, for oils and concentrates alike. Tests for E^1 per cent. 1 cm. 328 m and for the biological value, on 17 oils and concentrates, roughly confirmed this conclusion and it is suggested that 1400 is the factor by which the value for E^1 per cent. 1 cm. 328 m should be multiplied, in order to convert it into international units of vitamin A per g.

Further Studies on the Relation of the Vitamin B Complex, Especially Vitamin B_1, to Carbohydrate Metabolism

ABDERHALDEN and WERTHEIMER (*Pfluger's Arch.* 235:53-59, 1934) made the following observations.

Pigeons received various carbohydrates (fructose, galactose, glucose, lactose or sucrose) in addition to a diet of wheat and barley, in the proportion of 10 g. sugar to 15 grain mixture. With addition of the last three, symptoms were seen, but in the majority of cases they were atypical, including exaggerated muscular movements, not alleviated by treatment with vitamin B_1. In many cases there was disturbance of metabolism, which subsequently became adjusted to the high carbohydrate intake. When 10 g. olive oil was added to the grain diet, and the difficulties of feeding the mixture were overcome, convulsive symptoms were induced.

Polyneuritic symptoms appeared in control pigeons on a diet of polished rice, after 18-24 days and after 11-21 days in birds receiving extra carbohydrate.

Addition of 0.5 g. yeast to a polished rice diet plus carbohydrate, did not protect pigeons from polyneuritis. Lactoflavine had no influence on the onset of symptoms in birds kept on a polished rice diet, although there was an initial rise in body weight.

The Influence of the Pylorus upon the Regulation of the Acidity of the Gastric Secretion

With the use of a gastric duodenal tube which holds the pylorus open and thus permits free regurgitation of duodenal contents during gastric activity, gastric analysis curves were obtained for 12 subjects with duodenal ulcer and compared with curves obtained with the same subjects from ordinary gastric analysis without interference with the pyloric closure. When the pylorus was kept open the gastric acidity curve followed closely that of normal subjects, rising fairly abruptly during the first hour and then falling more gradually. With the ordinary method of fractional analysis without interference with the pylorus the duodenal ulcer curve showed increasing acidity for nearly two hours.

These findings of LERMANN and NELSON (*Am. J. Digest. Dis. Nut.*, 1:245-247, 1934) are thought to point to increased tonicity of the antral and pyloric segment as responsible for the sustained ulcer, and to confirm the theory that the movements of the pylorus are controlled by reflexes arising in the mucous membrane of the stomach and intestine rather than by high or low acid.

Intermediary Iron Metabolism in Children

Determinations of an acid soluble iron fraction contained in serum and considered to be an intermediary product of iron metabolism were made in a series of children of different ages. The highest value was found in umbilical blood from a newborn child. The value fell during the next few months and reached its lowest point at weaning; it subsequently rose and reached a constant value. The fall in this iron fraction ran roughly parallel with the fall in Hb. In the presence of any infection, its value fell rapidly

in the absence of a corresponding fall in Hb. level, and it returned to normal on recovery.

It is claimed by THOENES (*Acta Pediatrica*, 16:507-510, 1933) that the view that his iron fraction is an intermediary product of iron metabolism is supported by the fact that a blockade of the reticulo-endothelial system by the intravenous injection of colloidal metals in animals causes a marked lowering of the value of this iron fraction.

Investigations on Heavy Muscular Work

In view of the growing importance of sport throughout the world, and the tendency to support it out of public funds, an enquiry into the physical effects of severe exertion was sponsored by the Health Organisation of the League of Nations (*Quart. Bull. Health Org.* League of Nations 3:288-417, 1934). Three young men, first class athletes and also physiologists, took part in the enquiry in the double role of experiments and subjects. It was found that while during rest about 75 per cent. of heat produced is eliminated by radiation and convection and 25 per cent. by evaporation, during extreme exertion this ratio may be reversed. The subjects, in performing light and moderate work, catabolised both carbohydrate and fat in proportion determined by the preceding diet and nearly the same as during rest. The heavier the work, the greater the percentage of carbohydrate catabolised. A gradual fall in blood sugar, correlated with depletion of glycogen stores, was observed during prolonged muscular effort; at the same time lactic acid continued to rise. In work of maximal intensity, oxygen supply becomes the limiting factor for the duration of work. Kidney function is influenced by moderate muscular work, but seriously affected only when work is very heavy.

Practical suggestions with regard to training for atheletic contests are added. During the days preceding a severe contest, the diet should be high as regards energy value and carbohydrate, and heavy work should be avoided to allow for maximal filling of the glycogen stores. At least two days rest is essential between contests and games demanding extreme effort.

Factors Influencing the Utilisation of Calcium and Phosphorus of Cow's Milk

The results of balance experiments with an infant of 80 days old are recorded by HISS, PONCHER and WOOD WARD (*Am. J. Dis. Child*, 48:1058, 1934) in which the retentions of Ca and P were determined on (a) whole boiled cow's milk, (b) base exchange treated boiled milk, (c) base exchange treated powdered milk and (d) whole boiled cow's milk 0.6 g. citric acid per 100 ml. In all cases the milks were diluted with water and lactose and orange juice added. Although the base exchange treatment of the milk resulted in a reduction in the amount of Ca and P in the milk, the retention, both actual and percentage, of these two elements was raised. The treatment of the milk by base exchange results in a modification of the curd, an increase in the amount of ultra-filterable Ca and an increase in the amount of fixed base in the ash, and it is considered that these changes play a part in obtaining a maximum retention of Ca and P on minimum feedings of milk.

Malnutrition and Fatigue

F. W. SCULTZ (*Act. Ped.*, 16:138—148, 1933) approached the problem of the relationship between malnutrition and fatigue by a study of blood, and muscle metabolism. Fatigue was produced in dogs by treadmill exercise and by swimming and normal, half and one-third rations were given. On the horidontal treadmill there was little or no change in serum sugar, bicarbonate, or lactate concentration, and only a slight increase in fixed acids. On the inclined treadmill there was a marked decrease in bicarbonate, and an increase in lactate and sugar. Fatigue produced by swimming resulted in a rise in sugar and lactic acid, and in the acid base balance was displaced towards fixed acid excess. Further experiments showed, however, that the initial rise in lactic acid and the occasional rise in blood sugar were not fatigue phenomena. In certain cases of under-nourishment very low blood sugar values were found suggesting that inadequate food supply was a limiting factor in the production of fatigue. Recovery from fatigue was considerably delayed in the under-nourished dogs.

Role of Iodine in the Ætiology of Thyroid Diseases

L. SCHEFFER (*Schweiz. med. Woch.*, 64:969—971, 1934) considers that simple goitre is not due to deficiency of iodine in the ingesta; the lack of iodine in the environment where goitre is endemic is not necessarily the cause of the condition. In healthy people the iodine excreted was divided as

follows; urine 50, skin 40, fæces 5, expired air 5 per cent. In exophthalmic goitre the iodine balance was negative, due to excessive excretion in urine and fæces, but excretion by the skin was absent. Treatment by X-rays gradually made the balance positive and caused skin excretion to begin and the B.M.R. to fall. The author holds that in this disease the thyroid and tissues are not able to assimilate the circulating iodine. In hyperthyroidism without toxic symptoms the iodine balance was positive although the fæcal excretion was above normal. In simple goitre (women only examined) the iodine balance was normal, excretion by the skin was absent, by the urine much increased.

ASSOCIATION NOTES

Proceedings of the XXXII Meeting of the Central Council of the Indian Medical Association held at 67, Dharamtala Street, Calcutta, on the 30th April, 1935.

Members present: Dr. C. C. Bose, Dr. A. K. Sen, Dr. K. S. Ray, Dr. A. K. Chakrabarti, Dr. G. Mukherji, Dr. R. C. Sen and Dr. D. P. Ghosh. Dr. C. C. Bose was elected to the chair.

Read a letter dated the 28th April, 1935, from Col. Bhola Nauth expressing his inability to attend the meeting and suggesting adjournment of the meeting to the 3rd May, 1935, when he is expected to arrive in Calcutta.

Read also a letter from Dr. J. N. Bose expressing inability to attend the meeting.

After confirmation of the proceedings of the last meeting held at Delhi on the 25th March, 1935, and recording of the accounts, it was resolved to adjourn the meeting till 4th May, 1935.

* * * * *

The adjourned meeting of the Central Council was held on the 4th May, 1935, at the Central Office, 67, Dharmatala Street, Calcutta.

Members present: Col. Bhola Nauth, Dr. K. S. Ray, Capt. P. B. Mukherji, Dr. A. K. Sen, Dr. G. Mukherji, Dr. R. C. Sen, Dr. A. D. Mukherji, Dr. D. P. Ghosh, Dr. C. C. Bose and Col. K. K. Chatterji.

Col. Bhola Nauth took the chair.

1. Col. Bhola Nauth, the President, gave a short account of his tour, as follows:—

" I left Lahore on the 12th April, 1935, and on the way I visited *Cawnpore* where a very successful meeting was held. They gave me an ' At Home ' and I addressed the meeting. I explained to them the deplorable condition of the medical profession in India and that it needed organisation very badly to raise the moral tone of the profession and bring about solidarity among medical men. Cawnpore was a very flourishing branch and doing useful work. They have a house of their own and a fair amount of funds, and both service and non-service men are members of the Association.

From there I went to *Allahabad*, where we had a meeting and an ' At Home.' I addressed the meeting on the same lines as at Cawnpore.

Thence I went to *Benares*, where also I addressed a meeting and where they had a very strong medical union which included both service and non-service men as members. I went to see the Benares University and met Pandit Madan Mohan Malaviya, who asked me to visit the hospital of the University and the Medical School, which I did. He also asked me to make my suggestions with regard to improvements (the hospital was originally planned by me). I was also asked to visit the Marwari Hospital and to offer suggestions about the management, which I was only too glad to do. It is a private hospital for better class Hindus, containing about 45 beds and having an out- and in-patients department, worked mostly by private practitioners.

Arrah was the next place of call. I talked to them for over two hours and formed a branch there. By the evening train I went on to *Muzaffarpur* where I stayed one day, an ' at home ' being held in my honour. I found them all very keen and formed a branch at this centre. Next I visited *Motihari*, where also a branch was formed. Rai Bahadur Dr. Guha gave an ' at home.' I interviewed the Collector and the Civil Surgeon. Then I came to *Patna*. The meeting here was very well attended, almost every medical man, service and non-service, being present. I took an opportunity of interviewing the Inspector-General of Civil Hospitals, Bihar & Orissa and had a long conversation, in the course of which he said that he quite agreed that some such organization was very necessary to instil discipline and bring young medical men together. I proceeded thence to *Gaya*, where a meeting was held and a branch formed.

Ranchi was the next place on my itinerary. At the meeting held there, the Civil Surgeon was present and became a member of the Association, also Major Taylor, Superintendent of the European Hospital. Col. B. J. Singh, C.I.E., I.M.S. (retired Inspector-General of Prisons) was elected President of the Branch. At Ranchi I also interviewed the

Hon'ble Minister of Local Self-Government, Sir Ganesh Dutt Singh.

Jamshedpur. I stopped a whole day here and visited the hospital. It is a very fine hospital, well run and doing very useful work. I addressed a meeting of medical men, about fifty of whom formed a branch. Thence to Calcutta."

Col. Bhola Nauth spoke very appreciably of all the arrangements made for him at each centre visited and of the hospitality extended to him.

Dr. K. S. Ray then proposed that this Council records its grateful thanks and appreciation of Col. Bhola Nauth's great interest in making this tour on behalf of the Association at his own expense, in spite of indifferent health and trying weather. Carried unanimously.

Continuing Dr. Ray said that while we were indeed very grateful to Col. Bhola Nauth for all that he had done, we could not expect too much and moreover the Association had a duty to itself in furthering its objects. In view of the success that had met Col. Bhola Nauth's tour, he suggested that Col. Bhola Nauth might be prevailed upon to undertake a tour of Southern and other parts of India, October being perhaps the best time for such a tour, if the Association could meet the expenses. He suggested the Association might be able to spare Rs. 1,000 (Col. Bhola Nauth thought it would not cost so much) Dr. Ray appealed to the Journal Secretary to try to increase the advertisement revenue of the Journal so as to provide funds for this purpose and also suggested that the branches and other joint secretaries might be approached to co-operate with the Central Office in raising the necessary funds.

In this connection Capt. Mukerji suggested and Col. K. K. Chatterji, President of the Bengal Branch kindly agreed, that he should tour Bengal with a view to forming branches.

In further conversation, Col. Bhola Nauth remarked that one of the difficulties experienced by the Association was in regard to the membership of service men. He advised the formation of local branches who should then become affiliated to the I. M. A., and the affiliation should be of two kinds: (1) according to the present rules and (2) on the basis of service men and non-service men. So far as non-service men are concerned, out of the sum of Rs. 6 paid by each, Rs. 3 will be remitted to the Central Office which will entitle him to all the privileges of members of the Indian Medical Association. On the other hand, service men will not be members of the I. M. A., but merely members of the local branch, though they will join in the professional work of the I. M. A. Dr. Ray pointed out that the existing rule is practically in keeping with Col. Bhola Nauth's very acceptable suggestion and that there would be no difficulty in giving effect to it.

Another difficulty was to be found in regard to the joining of the Association by people who, though keen, did not possess British or Indian registrable medical qualifications, but German, American or other approvable foreign qualifications. At present the rules of the Association, if strictly interpreted, did not allow such people to become members and it was desirable that the rules should be altered in this respect. Accordingly it was decided to alter the rule concerned on the lines of the rules of the Calcutta Medical Club, viz.:

Rule 4. Any person possessing medical qualifications registrable in India or with such medical qualification as may from time to time be recognised by the Indian Medical Association shall be eligible for membership.

And that the matter be referred for reconsideration by the Central Council after obtaining the opinions of the branches.

2. In connection with the holding of the XII All-India Medical Conference, it was decided that Dr. DaSilva be informed that failing Nagpur if the Conference could be held in Jubbulpore, the Central Council would be pleased to accept the invitation. Failing that, the Central Council would allow their acceptance of the Karachi invitation to stand.

3. *Journal Committee.* The following were elected members till the end of the financial year:—

Dr. Miss Maitrayee Bose (vice Dr. G. Mukherji resigned).

Dr. Satyaban Ray (vice Dr. J. C. Banerjee resigned).

4. The Council considered a suggestion for the publication of an Indian Medical Directory and formed a sub-committee composed of the following to make all arrangements for such a publication:

Col. K. K. Chatterji,
Dr. K. S. Ray,
Dr. A. K. Sen,
Dr. G. Mukherji and
Capt. P. B. Mukherji.

Proceedings of the XXXIII Meeting of the Central Council of the Indian Medical Association held at 67, Dharamtala Street, Calcutta, on the 20th July, 1935.

Members present: Dr. J. N. Bose, Dr. D. P. Ghosh, Capt. P. B. Mukherji, Dr. S. C. Sen Gupta, Dr. A. D. Mukherji, Dr. G. Mukherji, Dr. A. K. Sen, Dr. S. P. Sen Gupta, Dr. K. S. Ray, Dr. C. C. Bose, Col. K. K. Chatterji, Sir Nilratan Sircar and Dr. D. N. Banerjee.

Capt. P. B. Mukherji (Vice-President) was elected to the chair in the absence of the President.

1. The Council records its deep sense of loss sustained at the death of Dr. I. T. Mittra, the President of the Delhi Branch of the Indian Medical Association and Dr. Mohammad Hussain, the Treasurer, Bangalore Branch, Indian Medical Association and conveys its sincere condolence to the members of the bereaved families and to the Delhi and Bangalore branches of the Indian Medical Association.

2. Proceedings of the last meeting held on the 30th April and 4th May, 1935, were read and confirmed.

Arising out of the proceedings of the last meeting, the Secretary reported that of the places visited by Col. Bhola Nauth during his last tour it is stated that branches of the Indian Medical Association have been started at Arrah, Muzaffarpore, Motihari, Gaya, Ranchi and Jamshedpur. Information has since been received from Motihari regarding the formation of a branch there with Rai Bahadur Dr. T. C. Guha, I.M.S., (Retd.), as President and Dr. Hari Shankar Prasad as Secretary. As regards Ranchi a letter has been received from Col. B. J. Singh, I.M.S. (Retd.), stating that it was decided to revive the old Ranchi Medical Association and then to get it affiliated to the Indian Medical Association. With regard to the other branches no information has been received.

Since the last meeting of the Central Council the following new branches have been formed:—

Bengal Provincial Branch (with District Branches at Calcutta, Howrah, Barrackpore, Darjeeling and Comilla).

Shahjahanpur, Dehra Dun, Ghazipur, Gonda, Khurja and Budaun in U. P., Motihari in Bihar.

3. Accounts for the months of April and May were recorded. In this connection it was gratifying to note the marked improvement in the realisation of the advertisement revenue of the journal.

4. In regard to the suggested alteration of Rule 4 in order to allow membership of this Association to be thrown open to persons possessing foreign medical qualifications, while many branches were in favour of the change, some of the branches suggested provisos to ensure that the qualifications were of a satisfactory standard or on a reciprocal basis with Indian qualifications. The Central Council considered it advisable (particularly as they considered that such alteration would offer a loophole to those whose qualifications might be regarded as questionable) to be guided by the views of the Bombay Branch, viz.:—

"An alteration in Rule 4 as suggested by Col. Bhola Nauth required a very close consideration as the change suggested was likely to bring the members of the I. M. A. in conflict with the Government by associating themselves with persons who did not posses registrable qualification. The Central Council be requested to postpone its consideration to its next meeting. In the meanwhile the Secretaries should secure further information in the matter from the Calcutta Medical Club and study the prohibition from associating with persons who did not posses qualification as already ruled by the Bombay Medical Council and as might be also in force in the rules of other Provincial Medical Councils and to report thereon at the next meeting of the Committee." Accordingly it was decided that the issue be deferred as suggested above.

5. The proposed alterations of Rule 29 were then considered apart from the Nagpur affair and on general lines. While most of the branches were in favour of the alteration to admit of the Conference being invited by affiliated bodies, there appeared to be a strong desire to retain the preference to branches. Dr. S. C. Sen of the Delhi Branch considered that " the Conference should not take place at any centre where there is a branch of the I. M. A. except on the invitation of the branch;" and he went on to add that " if affiliated bodies are going to have the same privileges as branches, no existing association will want to form itself into a branch, as thereby it would be saving their contribution quota to the Central Council. Even existing branches also

may be dissolved and they may affiliate themselves to the I. M. A. thereby saving a good deal of money." With Dr. Sen's views the Central Council could not agree since branches had many privileges over affiliated bodies which in themselves were a sufficient incentive. The Council having regard to the nature of the annual conference, which was open to medical men as a whole and not confined to members of this Association only, considered that the matter should be regarded in a very broad light. Indeed it was felt that such was the spirit of the existing rule and though it has been pointed out that the implication of the rule was to restrict invitations to branches, in one instance, namely that of Lucknow, where there was no branch of the I. M. A. neither any affiliated body of the I. M. A., a precedent had been established to the contrary. Judging from the success which had attended the Lucknow Conference and which resulted in the formation of a strong branch at Lucknow, it was an advantage not to confine the invitation to branches though at the same time the Council were anxious to give the branches a preference where they existed. Moreover, it may be considered necessary to have a conference in South India, namely in Madras, to stimulate enthusiasm among our colleagues there as we have not yet succeeded in enthusing them to start a branch or join as individual members except in a few isolated cases.

Accordingly it was resolved that the opening sentence of Rule 29 should read as follows:—

> "There should be organised an All-India Medical Conference under the auspices of the Indian Medical Association at a suitable place and time to be decided by the Central Council of the Indian Medical Association. Branches of the Indian Medical Association shall have the privilege of inviting the Conference but the Central Council may, if they think fit, accept the invitation of an affiliated body or other bodies approved by the Central Council."

In view of this the necessary consequential changes had to be provided and it was resolved further that paragraph 4 of Rule 29(a) be amended to read as follows:—

> "Half of the delegation fees realised from the above categories should go to the local branch of the affiliated body or other body inviting the Conference to meet the expenses of the Conference and the remaining half is to be credited to the funds of the Central Council of the Indian Medical Association."

Rule 29(d) be altered as follows:—

> "The local branch of the Indian Medical Association or the affiliated body or other body inviting the Conference shall elect the Organising Secretary of the Conference."

Rule 30(c) be amended to read as follows:—

> "Fifty per cent. of the delegation fees of the Annual Conference organised by the Association shall be paid to the Central Funds, the balance going to the funds of the branch or the affiliated body or other body inviting the Conference where the Conference is held to meet the expenses of the Conference.

6. The Secretary placed before the Council the invitation of the C. P. and Berar Medical Association to hold the 12th All-India Medical Conference at Nagpur. He related the circumstances as contained in the statement to the members of the Central Council which led to the controversy regarding the holding of the next All-India Medical Conference at Nagpur. Letters on the subject received from Dr. Jivraj Mehta, Major M. G. Naidu, Dr. S. N. Kaul, Dr. J. P. Modi, Dr. M. R. Samey, Dr. S. C. Sen, Dr. Thungamma, Hyderabad Branch and Sialkot Branch were placed before the meeting, and the Secretary also placed on the table a letter received from the "President of the Nagpur Branch (now dissolved)" in which an intimation was given of the dissolution of this branch and (it is understood) those members have been constituted into a separate and rival organisation. The question was raised as to whether the Council could properly proceed to consider the letter of a dissolved branch written evidently after the dissolution. After giving a very careful consideration to the facts the Council felt that every opportunity had been given to the Nagpur Branch to arrive at a compromise, that it had been treated with the greatest courtesy and patience, that its action in dissolving itself before the Central Council had arrived at a final decision was premature, precipitate and regrettable and placed it out of court in the further consideration of the Council. On the other hand, the Council was impressed by the earnestness displayed by the C. P. and Berar Medical Association and also the keen support offered by the Amraoti and Jubbulpore branches and did not think it proper to ignore the

wishes of this large number of medical practitioners in the C. P. or disappoint their hopes. Accordingly it was resolved to accept with thanks the invitation extended by the C. P. and Berar Medical Association to hold the 12th session of the All-India Medical Conference at Nagpur this year and it was further resolved to take this opportunity of thanking the Karachi Branch for having waived their claim in response to the appeal issued by the Secretary to let the Conference being held at Nagpur. The action of the Secretary in the matter was approved.

7. Regarding Donations towards Quetta Earthquake Relief Fund. The action of the Secretary in donating Rs. 500/- to the Viceroy's Quetta Earthquake Relief Fund was approved. It was resolved to contribute a further sum of Rs. 500/- to the Central Fund instituted by Sjt. Rajendra Prasad and a sum of Rs. 250/- to Mrs. Bholanauth's Quetta Earthquake Relief Fund for Women and Children.

8. (a) The suggestion of Dr. S. N. Kaul to issue to the branches and affiliated bodies a circular 6 months in advance regarding the invitation of the Conference for the next year was unanimously approved.

(b) Regarding arrangements for Col. Bhola Nauth's second tour the Secretary was authorised to carry on further negotiations regarding this tour in consultation with the President and to prepare an itinerary. Read also letters from Delhi Branch, Allahabad Branch, Hyderabad Branch, Sialkot Branch, Bhagalpur Branch, Bombay Branch and from Dr. M. R. Samey. The offer of Dr. Samey be communicated to Col. Bhola Nauth.

(c) Regarding reduction of branch contribution to the Central Fund. As the majority of opinions received are not in favour of making any reduction to the existing rate it was resolved that no action be taken in the matter.

INDIAN MEDICAL ASSOCIATION

U. P. Provincial Branch

Resolutions of the Working Committee of I. M. A. U. P. Provincial Branch passed on 17th July, 1935.

" Resolved that the expenses of printing and publishing the reports of the Proceedings of the Annual U. P. Medical Conference every year should be meat from the funds realised by the Reception Committee, which shall earmark a sum of Rs. 50 for the purpose."

" Further resolved that the Secretary, Reception Committee shall pay to the Hony. Provincial Secretary, the actual expenses for printing and publishing the above-mentioned report on presentation of the bill for the same by the Provincial Secretary."

(Sd.) R. N. Bose,
Jt. Hony. Secretary.

Meerat,
18th July, 1935.

INDIAN MEDICAL ASSOCIATION

Motihari Branch

Proceedings of a meeting of the District Branch of the I. M. A., Motihari, held on the 7th July, 1935.

Members Present: Rai Bahadur Dr. T. C. Guha. Dr. S. K. Verma, Dr. Narayan Prasad, Dr. Sarayu Prasad, Dr. Hari Shanker Prasad, Dr. K. B. Banerjee.

1. Proceedings of the previous two meetings were read and confirmed.

2. The letter from the Secretary, I. M. A., dated 30th June, No. nil was considered and it was resolved that this branch is quite an infant one and therefore is not in a position to invite the Conference.

3. As regards the letter from the Secretary, I. M. A. asking for one representative from our branch it was resolved that this branch is quite in its infancy and hence does not propose to send any one at present.

4. Considered the suggestion for the framing of bye-laws and it was resolved that a sub-committee be formed of the following members to draft the bye-laws to be put before the general committee in the month of September for consideration.

Rai Bahadur Dr. T. C. Guha,
Rai Bahadur Dr. Ramdhari Singh,
Dr. Narayan Prasad.

5. Considered the suggestion of the Secretary, regarding the enlistment of the medical practitioners of the District in the interior to be the members of

this Branch and it was resolved that the General Secretary will issue a general request to the medical practitioners.

(Sd). H. S. PRASAD,
Hony. General Secretary.

INDIAN MEDICAL ASSOCIATION

Jhansi Branch

At a meeting of the Jhansi Branch the following resolution as proposed by Dr. H. N. Shivapuri and seconded by Dr. F. L. Jain was passed unanimously:—

"This meeting of the Jhansi Medical Association expresses its deep sympathy with the sufferers in the Quetta Earthquake and hopes that medical men everywhere will help the sufferers in the best way they can."

FARIDPUR MEDICAL ASSOCIATION

Proceedings of a meeting of the Faridpore Medical Association held at the Faridpur Clinical and Research Laboratory Hall on the 15th August, 1935, under the presidency of Dr. Promode Lal Chaudhury, L.M.S., the President of the Association:—

Members present: Dr. Promode Lal Choudhury, President, Dr. S. R. Ghose, B.Sc., M.B., Dr. Amiya Kumar Maitra, M.B., B.Sc., Dr. Ramesh Chandra Biswas, M.B., Dr. Jogatjiban Chatterjee, L.M.F., Dr. Kiran Ch. Roy, M.B., Dr. Sudhangsu Shekhar Bhattacharyya, M.B. and others.

Read and considered the letter of the Honorary Secretary of the Indian Medical Association (Bengal Branch) and resolved unanimously that the Faridpur Medical Association be formed a branch of the Indian Medical Association.

(Sd.) S. GHOSE,
Secretary,
(Sd.) P. L. CHOWDHURI,
President,
Faridpur Medical Association.
18th August, 1935.

INDIAN MEDICAL ASSOCIATION

U. P. Provincial Branch

Having received the name of Major D. R. Ranjit Singh, O.B.E., K.I.H., of Allahabad only from the following branches up to 1st August, 1935, (the time allowed for receipt of nominations); Meerut, Gonda, Dehra Dun, Jhansi, Bulandshahr, Ghazipur, Muzaffarnagar, Etawah, Benares, Cawnpore, Bareilly, and Allahabad, the Honorary Provincial Secretary placed the same before the Working Committee on the 12th August, 1935.

"Resolved that this Working Committee, in absence of any other nomination, declared Major D. R. Ranjit Singh, O.B.E., K.I.H., L.M.S., of Allahabad, duly elected upopposed for the office of the Presidentship of this Provincial Branch, of Indian Medical Association, for 1935-36, under the powers vested in the said Committee by the Provincial Council vide that Council's resolution No. 4, dated (Delhi Camp) the 26th December, 1934."

He is, therefore, also the President-elect of the 2nd U. P. Medical Conference to be held at Cawnpore on 12th and 13th October, 1935.

MEDICAL NOTES AND NEWS

INTERNATIONAL MEDICAL POST-GRADUATE COURSES IN BERLIN

The Berliner Akademie für ärztliche Fortbildung, the successor of the Dozentenvereinigung für ärztliche Fortbildung in Berlin, which is managed by the Chief Burgomaster of Berlin, is holding the following medical post-graduate courses in the autumn of 1935:

1. Throat, nose and ear course (from September 30th to October 12th). Fee 120 RM.

2. Course in infectious diseases (from September 30th to October 5th). Fee: 40 RM.

3. Internal medicine from the point of view of functional pathology and therapy (from October 7th to October 19th). Fee: 60 RM.

4. The biology of heredity and racial purity in medical practice (from October 7th to October 12th). Fee: 40 RM.

5. Course in tuberculosis in the City of Berlin's Tuberculosis Hospital "Waldhaus Charlottenburg" in Sommerfeld (from October 21st to October 26th). Fee: 50 RM.

6. The surgery of intra-thoracic diseases with special regard to pulmonary tuberculosis (from October 28th to November 1st). Fee: 80 RM.

7. Special courses in all branches of medicine with practical work at the bedside and in the laboratory, are held every month. The fee is 50—80 RM for eight periods of two hours. In these courses special value is attached to practical work; theoretical post-graduate training occupies a secondary position, but is of course not neglected.

For programmes and further information apply to the Geschäftsstelle der Berliner Akademie für ärztliche Fortbildung, Berlin NW 7, Robert-Koch-Platz 7 (Kaiserin Friedrich-Haus).

Foreign doctors and German doctors resident abroad are granted a reduction of fare of 60% on the German Railways Company's lines; a foreign doctor can reduce the cost of his stay considerably by utilizing what are called "registered marks"; it is advisable to arrange matters with the local bank before starting.

PHYSICIANS MUST BROADCAST ANONYMOUSLY

The General Medical Council (the body appointed by the Government to control medical education and the conduct of physicians) made a regulation in 1932 that when in the interest of education or for the information of the public, it is desirable or necessary that matter concerning medicine or public health should be broadcast, the person broadcasting and his remarks should be approved by a physician nominated for the purpose by the Ministry of Health. This regulation has now been rescinded and the Council has decided that physicians must broadcast anonymously, that correspondence addressed to them should not be forwarded, and that their anonymity must be strictly observed in connection with any enquiries relevant to them or their talks. Also the Council is to be furnished after the event with names of the broadcasters and the text of their matter. The basis of the Council's action is that anything in the nature of advertising by a physician is strictly forbidden. What he does in broadcasting must not be susceptible of being constructed as "advertising whether directly or indirectly, for the purpose of obtaining patients or promoting his own professional advantage."

THE PLANNING OF BRITAIN'S FOOD IMPORTS

During the years 1924-27 home production provided about 38 per cent. of the annual food supplies of the United Kingdom and imports about 62 per cent. Between 1925 and 1931 the total volume of food imports increased by 23 per cent. and during the same period, agricultural prices declined about 20 per cent., a further fall of 16 per cent. taking place between 1931 and 1933. An attempt to stem this disastrous fall in prices and to regulate the quantity and quality of imports of agricultural produce into the United Kingdom has been made by the provisions of the Agricultural Marketing Act of 1933. In this study, the effect of recent protective legislation is discussed in relation to the changes that have occurred in the volume of food imports during the last few years.

(*Oxford Univ. Agric. Ecom. Res. Inst.*, 1934).

THE EFFECT OF LOW INCOME ON HEALTH

Brief partial results are given of a study made in 1933 by the U. S. Public Health Service and the Millbank Memorial Fund on the incidence of sickness and the adequacy of diet in 10 districts (11,000 families) where the depression had been severe. Disabling illness was heaviest in the class which had been in comfortable circumstances in 1929 but which was reduced to comparative poverty in 1932. The diets of families in poorer circumstances indicated that, in terms of calories, poor choice of food was a more serious problem than actual shortage. Protective foods were reduced to a minimum and the supply of milk was cut down. There was a low consumption of fruit and vegetables suggesting a deficiency of Ca and vitamins.

(*J. Home Econ*, 1934).

MEDICAL SCHOOLS IN BENGAL

Average Cost per Student

There are nine medical schools affiliated to the State Medical Faculty of Bengal and 3,006 students were under training in them during the year 1933-34. Of these nine schools, six are Government institutions located at Calcutta, Dacca, Mymensingh, Burdwan, Chittagong and Jalpaiguri; the other three are under private management, two being located at Calcutta and one at Bankura. Of the two private medical schools at Calcutta, one, viz., the Jatiya Ayurvijnan Parishad or the National Medical institute was helped by the Government in 1932-33 with a capital grant of a lakh.

The average primary cost per student in the Government schools varied from Rs. 60 in the Lytton Medical School at Mymensingh to Rs. 603 at the Campbell Medical School. In the private institutions the cost varied from Rs. 62 in the Calcutta Medical School to nearly Rs. 286 in the National Medical Institute. The variation in cost is due mainly to the cost of the establishment maintained in connection wtih the various schools and connected hospitals.

The total expenditure in the Government schools in 1933-34 amounted to nearly four lakhs as against three lakhs and a half in the previous year, while the receipts from sources other than Government were nearly two lakhs.

Training of Compounders

Compounders are now trained at all the Government Schools except at Jalpaiguri and the 'dai' class at Dacca is growing in popularity. There was a post-graduate training class at the Campbell School where 26 Sub-Assistant Surgeons, including a Local Board doctor from Assam and four District Board doctors, received training during the year.

A press note on the Calcutta Medical College states:—With a per capita cost (calculated on figures of 1931-32) of Rs. 1276-3 for military students and of Rs. 1,337 for civil students, the Calcutta Medical College had on its rolls in 1932-33 (on latest figures available) 47 military students and 717 civil students of whom 699 were male and 18 female. The average monthly number of pupils was 46.5 military, 704.67 civil (687 male and 17.67 female). As compared with the previous year there has been a slight fall in the number of students, the figures for the previous year for civil students being 727, (713 male and 14 female).

Classified by nationality, the civil students were composed as follows:—

	Male.	Fem.
Bengalis	654	10
Assamese	35	4
Central Provinces	3	0
Nepalese	2	0
Burmese	1	0
Europeans & Eurasians ...	3	1
Jews	1	3
	699	18

The total receipt of the College from all sources excluding Rs. 2,28,179 received from the Local Government amounted to Rs. 2,49,176, while the total expenditure under the head " Civil students " was Rs. 4,86,144. The actual realisation made during the year (1932-33) from other Governments for the training of students belonging to their provinces during 1931-32 was Rs. 1,17,542.

Research Work

There were 58 civil pupil nurses and 43 pupil dhais in the College rolls while 4 Civil Assistant Surgeons serving with the Government of Bengal were given post-graduate training during the year. Important researches were carried on various departments of the College. Tuberculosis, epidemic dropsy

and leprosy amongst other subjects received attention and papers on the same were published by the members of the teaching staff. It may be interesting to note that at least three propaganda pamphlets of the Association for the Prevention of Blindness in Bengal, viz., those entitled (1) the Anatomy and Physiology of the Normal Eye (2) Causes of Blindness in India and their prevention, (3) Hygiene of vision were supplied by the Department of Ophthalmology.

The College, one of the historic institutions in the land and a landmark in the spread of Western education in India and of India's connection with Britain, completed the hundredth year of its existence in 1935 and duly celebrated the centenary.

REVIEWS

The Fourth Annual Report of the Association for the Prevention of Blindness in Bengal, Session 1934.

Within the short period of existence of the Association it has shown steady progress with very slender purse. Recently it has been affiliated with the Bengal Provincial Branch of the Indian Red Cross Society so that the propaganda work in the great problem of the prevention of blindness can be disseminated through its distributing centres. The number of members on the Committee has been raised in order to push propaganda work and to increase its activities.

During the year under review, selected posters have been printed by thousands and distributed to different hospitals in Bengal and to the schools. These posters are not only simple in design but are written in the Bengali language so that the masses could follow the simple methods of prevention of blindness. The magic lantern slides prepared from these posters have been greatly improved and shown by demonstrating and lectures in the Health Exhibitions and other places.

Illustrated booklets have been specially written in very simple language in order to educate the public in the protection of the eye in health and disease. These pamphlets are now being distributed to the schools in Bengal through the Director of Public Instruction. The following is the complete list to date of those so far published: (1) Common eye diseases in Bengal (2) Causes of blindness in India and their prevention (3) The anatomy and physiology of the normal eye (4) Hygiene of vision (5) Sight preservation (6) Care of the eyes (7) Glaucoma.

During the year a new film entitled " How to prevent blindness " in three reels was acquired from the Indian Red Cross Society. This film, in fact, has been presented to the Association by Mr. and Mrs. R. Mather and by the Association to the Indian Red Cross Society. It has cost Rs. 600 and the caption are written in Bengali and English. The film has been shown to the public at many places including different railway centres in Bengal together with a simple lecture given by an ophthalmologist.

The outbreak of severe form of Epidemic Dropsy in Bengal in which glaucoma supervenes in a large number of cases, led to the spread of information as to the means of prevention and care through lay press and radio on many occasions is another type of activity of the Society this year.

Thus we find the Society has done and is doing a good deal of humanitarian work and help ought to come forward from all quarters specially for the execution of the scheme of a travelling hospital which would cost Rs. 7,000 annually.

B. N. B.

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Vol. VII, *Pediatrics*, p. 1211, D. Alleton-Century inc.

The Volume VII of the " Practitioners' Library of Medicine and Surgery " dealing with Pediatrics is the outcome of the efficient collaboration of 34 eminent contributors from England and America. The subject-matter has been dealt with under 45 chapters. The book appropriately starts with a chapter on the anatomy and physiology of the newly-born infant and its subsequent growth and development. This preliminary knowledge is most essential for the proper management of sick children. Of the various other chapters, those on Infant Nutrition, Diseases due to Defective Diets, Scarlet Fever, Diphtheria, Measles and Tuberculosis, are full of the most up-to-date and practical information on the subject. The sections on diseases of liver and spleen have rather been sketchy. In course of studying the treatment of various diseases the reader will find many of his traditional beliefs shattered. In the treatment of diarrhœa in babies the type of sugar does not matter; " cane-sugar is not inferior to the mixtures of maltose and

dextrin that are generally used....." The author has never seen an advantage in complete-skimmed milk over half-skimmed milk. In treatment of lobar pneumonia digitalis has been said to be of little value. In typhoid fever the necessity of a more liberal diet has rightly been emphasized. The use of sweet milk with cream and lactose and use of fruit juices are, however, open to criticisms. The reader will find a few printing mistakes here and there. On the whole, however, the book is well written with a list of useful references at the end of each chapter. There are 93 beautiful illustrations, of which 31 are incorporated in the chapter on Tuberculosis.

We may unhesitatingly state that this volume will be a valuable addition to the Library of a busy general practitioner and even of a specialist.

J. C. B.

ACKNOWLEDGMENT

The following Journals have been added to the list of exchange (foreign) during the month of August, 1935 :—

1. Archieves de l'Institut Pasteur d'Algerie, (in the French Language).

2. The West African Medical Association Journal.

3. Transaction of New York Post-Graduate Medical School, Columbia University.

The following book has been received for review :—

" Medical Case-Taking " by Bidhu Bhushan Pal, L.M.S., Bengal Medical Service, Upper-Teacher of Medicine, Dacca Medical School, with a, foreword by Captain R. Linton, M.B., ch.B., B.SC., I.M.S., Superintendent, Dacca Medical School. Page i—x-l—194. Price Cloth Bound 2/8/-. Paper Bound 2/-/-. Published by Indu Bhushan Pal, M.B. 1/1, Ananda Ch. Roy St., Dacca.

•Some Recent Cow & Gate Awards

The support and prescription of the Doctor—the warm recommendation of the Nurse—the praise of the Mother, and the delighted though unspoken approval of the Baby—all these are tributes highly valued and esteemed by Cow & Gate. *Judging Committees the world over have not failed to confirm the verdict also.* Here are a few of the recent awards out of 127 gained during the last few years by this famous Food so skilfully made in the pasture lands of the English West Country.

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127 HONOURS & AWARDS

XII ALL-INDIA MEDICAL CONFERENCE

1935

The XII All-India Medical Conference will be held at Nagpur during the ensuing Christmas week. Subjects concerning the vital interest to the medical profession in India, e.g. Rural Medical Relief, Health Insurance Scheme, Indian Medical Council Bill, etc. will be discussed in the Conference. Scientific Section of the Conference and the exhibition will no doubt afford every medical man a good opportunity to know the advance made in this country in medical science. In order to make this Conference thoroughly representative of the medical profession of India it is requested that all members of the profession should join the Conference and take part in the deliberations. For particulars please write to the Organising Secretary, XII All-India Medical Conference, C. P. and Berar Medical Association, Nagpur.

XII ALL-INDIA MEDICAL CONFERENCE

Medical Exhibition, 1935

In connection with the XII All-India Medical Conference a Medical Exhibition is proposed to be held in Nagpur during the next Christmas Holidays. It is expected that medical men from all parts of India will attend the Conference. It will afford an excellent opportunity to dealers and manufacturers of medical requisites to exhibit their products. Those who are willing to take the stalls at the exhibition will please write for particulars to the Organising Secretary XII All-India Medical Conference, C. P. and Berar Medical Association, Nagpur.

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